55-1520-238-23-2/988

TM 55-1520-238-23-2

DESCRIPTION AND OPERATION – AIRFRAME
ACCESS PROVISIONS
MAINTENANCE – FUSELAGE
MAINTENANCE – EMPENNAGE
MAINTENANCE – WINGS
MAINTENANCE – NACELLE
DESCRIPTION AND OPERATION – LANDING GEAR
MAINTENANCE – MAIN LANDING GEAR
MAINTENANCE – TAIL LANDING GEAR
MAINTENANCE – BRAKE SYSTEM

TECHNICAL MANUAL

AVIATION UNIT AND INTERMEDIATE MAINTENANCE MANUAL

FOR

ARMY AH-64A HELICOPTER

CHAPTER 2
AIRFRAME

CHAPTER 3
LANDING GEAR SYSTEM

This copy is a reprint which includes current pages from Change 1.

"Approved for public release; distribution is unlimited."

This manual together with TM 55-1520-238-23-1, 7 June 1988, TM 55-1520-238-23-3, 7 June 1988, TM 55-1520-238-23-4, 7 June 1988, TM 55-1520-238-23-5, 7 June 1988, TM 55-1520-238-23-6, 7 June 1988, TM 55-1520-238-23-7, 7 June 1988, TM 55-1520-238-23-8, 7 June 1988, TM 55-1520-238-23-9, 7 June 1988, TM 55-1520-238-23-10, 7 June 1988, supersedes TM 55-1520-238-23-1, 4 March 1985, TM 55-1520-238-23-2, 4 March 1985, TM 55-1520-238-23-3, 4 March 1985, TM 55-1520-238-23-4, 4 March 1985, TM 55-1520-238-23-5, 4 March 1985, TM 55-1520-238-23-6, 4 March 1985, TM 55-1520-238-23-7, 4 March 1985, TM 55-1520-238-23-8, 4 March 1985.

HEADQUARTERS, DEPARTMENT OF THE ARMY

7 JUNE 1988

D101.11:

READEX FICHE best copy available

CHANGE
NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 22 December 1988

Aviation Unit and Intermediate Maintenance Manual

AH-64A HELICOPTER

TM 55-1520-238-23-2, 7 June 1988, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove pages	Insert Pages
2-349 and 2-350	2-349 and 2-350
2-353 and 2-354	2-353 and 2-354

2. Retain this sheet in front of manual for reference purposes.

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

WILLIAM J. MEEHAN II
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-31, AVUM and AVIM Maintenance requirements for AH-64A Helicopter, Attack (APACHE).

CHAPTER 2

AIRFRAME

CHAPTER OVERVIEW

This chapter contains description and operation information and maintenance instructions for the airframe.

Airframe troubleshooting information is in TM 55-1520-238-T.

CHAPTER INDEX

Section I - AIRFRAME DESCRIPTION AND OPERATION

Para Title	Para No.
Airframe Description and Operation	2-1-1
Fuselage Description and Operation	2-1-2
Wings Description and Operation	2-1-3
Engine Nacelles Description and Operation	2-1-4
Canopy Description and Operation	2-1-5
Crew Seats Description and Operation	2-1-6
Seat Restraint System (Seat Belts) Description and Operation	2-1-7
Empennage Description and Operation	2-1-8

Section II - HELICOPTER ACCESS PROVISIONS

Access Provisions Inspection/Repair	2-2-1
Access Provisions	2-2-2
Access Provisions Left Side	2-2-3
Access Provisions - Right Side	2-2-4
Access Provisions - Top Side	2-2-5

CHAPTER INDEX (cont)

Para Title	Para No.
Access Provisions - Bottom Side	2-2-6
Access Provisions - Top Side Engine Work Platform and Equipment Bay	2-2-7
Pilot Left and Right Console Panels Removal/ Installation	2-2-8
CPG Left and Right Console Panels Removal/ Installation	2-2-9
Thermal Insulation and Hook and Pile Fastener Removal/Installation	2-2-10

Section III - FUSELAGE MAINTENANCE

Para Title	Para No.
Fuselage Inspection	2-3-1
Classification of Fuselage Damage and Types of Repair	2-3-2
Forward Fuselage Frame Structure	2-3-3
Center Fuselage Frame Structure	2-3-4
Aft Fuselage Frame Structure	2-3-5
Fuselage Side Skin Plates	2-3-6
Fuselage Top Skin Plates	2-3-7
Fuselage Bottom Skin Plates	2-3-8
Fuselage Stringers	2-3-9
Catwalk Removal/Installation	2-3-10
Pass-Thru Tray Replacement	2-3-11
Pilot/CPG Seat Removal/Installation	2-3-12
Pilot Canted Bulkhead Bearing Replacement	2-3-13
Pilot/CPG Seat Cushion Replacement	2-3-14

CHAPTER INDEX (cont)

Para Title	Para No.
Pilot/CPG Seat Handle Replacement	2-3-15
Nontransparent Barrier Armor Removal/Installation	2-3-16
Pilot/C Lap Belt Replacement	2-3-17
Pilot/CPG Rotary Buckle Replacement	2-3-18
Pilot/CPG Shoulder Harness and Inertia Reel Removal/Installation	2-3-19
Pilot/CPG Restraint Control Replacement	2-3-20
Pilot/CPG Station Access Door Canopy Lock Removal/Installation	2-3-21
Pilot Station Access Door Removal/Installation	2-3-22
Pilot Station Access Door Adjustment	2-3-23
Pilot Station Access Door Mechanism Repair	2-3-24
Pilot Access Door Strut Pulley Removal/Installation	2-3-25
CPG Access Door Strut Pulley Removal/Installation	2-3-26
Pilot Station Access Door Lower Hinge Half Removal/Installation	2-3-27
CPG Station Access Door Removal/Installation	2-3-28
CPG Station Access Door Adjustment	2-3-29
CPG Station Access Door Mechanism Repair (AVIM)	2-3-30
CPG Station Access Door Lower Hinge Half Removal/Installation	2-3-31
Forward Canopy Windshield Removal/Installation	2-3-32
Canopy Jettison Support Drain Tube Replacement	2-3-33
Upper Canopy Windshield Removal/Installation	2-3-34
Left Forward Canopy Panel Removal/Installation	2-3-35
CPG Door Transparent Panel Removal/Installation	2-3-36

CHAPTER INDEX (cont)

Para Title	Para No.
Left Aft Canopy Panel Removal/Installation	2-3-37
Pilot Door Transparent Panel Removal/Installation	2-3-38
Forward Door Latch Striker Plate Removal/Installation	2-3-39
Aft Door Latch Striker Plate and Canopy Lock Switch Removal/Installation	2-3-40
Cockpit Sealing	2-3-41
Left Vertical Glareshield Removal/Installation	2-3-42
Right Vertical Glareshield Removal/Installation	2-3-43
Electrical Power Distribution Box Cover Removal/Installation	2-3-44
Forward Center Transmission Strut Removal/Installation	2-3-45
Aft Left Center Transmission Strut Removal/Installation	2-3-46
Aft Right Center Transmission Strut Removal/Installation	2-3-47
Left Forward Side Transmission Strut Removal/Installation	2-3-48
Right Forward Side Transmission Strut Removal/Installation	2-3-49
Left Aft Side Transmission Strut Removal/Installation	2-3-50
Right Aft Side Transmission Strut Removal/Installation	2-3-51
Mast Base Removal/Installation	2-3-52
Mixer Support Fitting and Bolt Removal/Installation (AVIM)	2-3-53
Left or Right Ammunition Magazine Strut and Eyebolt Removal/Installation	2-3-54
Fuselage Handhold Removal/Installation	2-3-55

CHAPTER INDEX (cont)

Para Title	Para No.
Right Footstep Removal/Installation	2-3-56
Left Center Fuselage Footstep Removal/Installation	2-3-57
Work Platform Doors Removal/Installation	2-3-58
Work Platform Door Strut Removal/Installation	2-3-59
Work Platform Door Latch Replacement	2-3-60
Main Landing Gear Fairing Removal/Installation	2-3-61
Right Forward Avionics Bay Aft Door Removal/Installation	2-3-62
Repair Airframe by Replacing Door Latch	2-3-63
Access Door Latch Replacement	2-3-64
Repair Airframe by Replacing Camloc Receptacle	2-3-65
Camloc Stud Replacement	2-3-66
Camloc Stud (With Packings) Replacement	2-3-67
Repair Airframe by Replacing Nutplate	2-3-68
Repair Airframe by Replacing Hinge Half	2-3-69
Canopy Side Panel Seal Replacement	2-3-70
CPG Fixed Glareshield Removal/Installation	2-3-71
CPG Glareshield Curtain/Tray Removal/Installation	2-3-72
Pilot Glareshield Curtain/Tray Removal/Installation	2-3-73
CPG Glareshield Extension Removal/Installation	2-3-74
Pilot Fixed Glareshield Removal/Installation	2-3-75
Pilot Glareshield Extension Removal/Installation	2-3-76

CHAPTER INDEX (cont)

Para Title	Para No.
Sensor Surveying Unit (SSU) Mount Removal/Installation . . .	2-3-77
CPG Map Holder Removal/Installation	2-3-78
Fire Extinguisher Mounting Bracket and Support Removal/Installation	2-3-79
CPG Rear View Mirror Removal/Installation	2-3-80
Pilot/CPG Foot Guard Removal/Installation	2-3-81
Canopy Vent Handle Removal/Installation	2-3-82
Pilot Boresight Reticle Unit (BRU) Mount Removal/Installation.	2-3-83
Pilot Boresight Mount Adapter Removal/Installation	2-3-84
Pilot Boresight Mount Support Removal/Installation	2-3-85
CPG Boresight Mount Fitting Removal/Installation	2-3-86
CPG Left or Right Protective Cover Removal/Installation . . .	2-3-87
Pilot Left or Right Scuff Plate Removal/Installation	2-3-88
CPG Left or Right Scuff Plate Removal/Installation	2-3-89
CPG Left or Right Floor Armor Removal/Installation	2-3-90
Nose Gearbox Fairing and Shroud Removal/Installation.	2-3-91
Main Landing Gear Cross Tube Removal/Installation	2-3-92
Access Door T290L or T290R Removal/Installation	2-3-93
Grounding Jack Replacement	2-3-94
Electrostatic Discharger Replacement	2-3-95
Upper Canopy Panel Removal/Installation	2-3-96
Transparent Barrier Replacement	2-3-97
Canopy Door Struts Anchor Removal/Installation	2-3-98

CHAPTER INDEX (cont)

Para Title . . . Para No.

Section IV - EMPENNAGE MAINTENANCE

Empennage Inspection . . . 2-4-1

Classification of Empennage Damage and Types of Repair . . . 2-4-2

Empennage Frame Structure . . . 2-4-3

Stabilator Frame Structure . . . 2-4-4

Empennage Skin Plates . . . 2-4-5

Tailboom Closeout Cover Removal/Installation . . . 2-4-6

Horizontal Stabilator Removal/Installation . . . 2-4-7

Step/Handhold Removal/Installation . . . 2-4-8

Vertical Stabilizer Removal . . . 2-4-9

Vertical Stabilizer Installation . . . 2-4-10

Vertical Stabilizer Fairings R510 and L510 Removal/Installation . . . 2-4-11

Vertical Stabilizer Fairings L530 Removal/Installation . . . 2-4-12

Vertical Stabilizer Tip T545 Removal/Installation . . . 2-4-13

Vertical Stabilizer Trailing Edge Removal/Installation . . . 2-4-14

Section V - WINGS MAINTENANCE

Wings Inspection . . . 2-5-1

Classification of Wing Damage and Types of Repair . . . 2-5-2

Wing Frame Structure . . . 2-5-3

Wing Skin Plates . . . 2-5-4

Wing Removal . . . 2-5-5

Wing Installation . . . 2-5-6

Wing Trailing Edge Removal/Installation . . . 2-5-7

CHAPTER INDEX (cont)

Para Title Para No.

Section VI - NACELLE MAINTENANCE

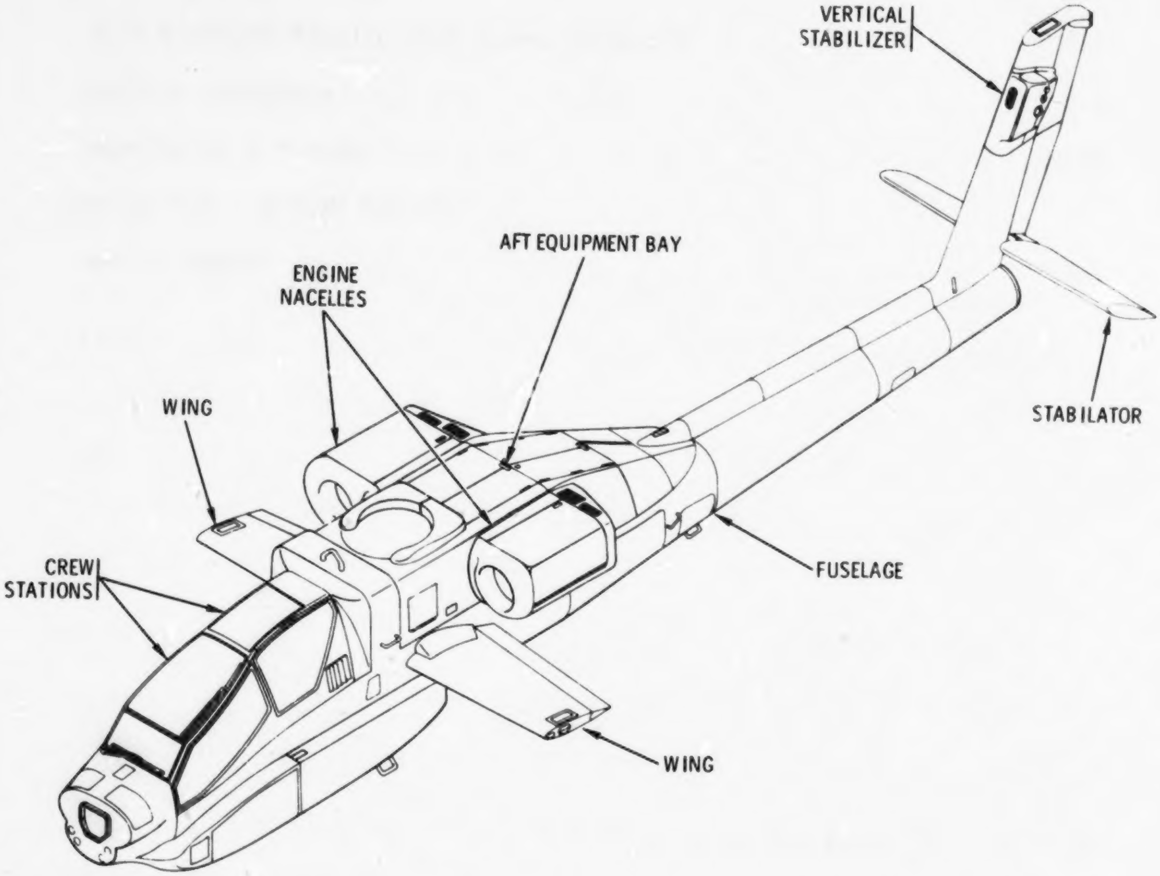
Nacelle Inspection 2-6-1
Classification of Nacelle Damage and Types of Repair 2-6-2
Work Platform Nacelle Door Frame Structure 2-6-3
Nacelle Structure 2-6-4
Nacelle Skin Plates 2-6-5

Section VII - KEVLAR REPAIR

Kevlar Repair 2-7-1

Section I. AIRFRAME - DESCRIPTION AND OPERATION

2-1-1. AIRFRAME DESCRIPTION AND OPERATION



MM04-1423

2-1-1. AIRFRAME DESCRIPTION AND OPERATION (cont) 2-1-1

A. The airframe is the complete helicopter structure.

B. The airframe is constructed mostly of aluminum.

C. The structure consists of frames and stringers covered by skin panels.

D. The major airframe parts are:

Fuselage

Wings

Aft Equipment Bay

Crew Station

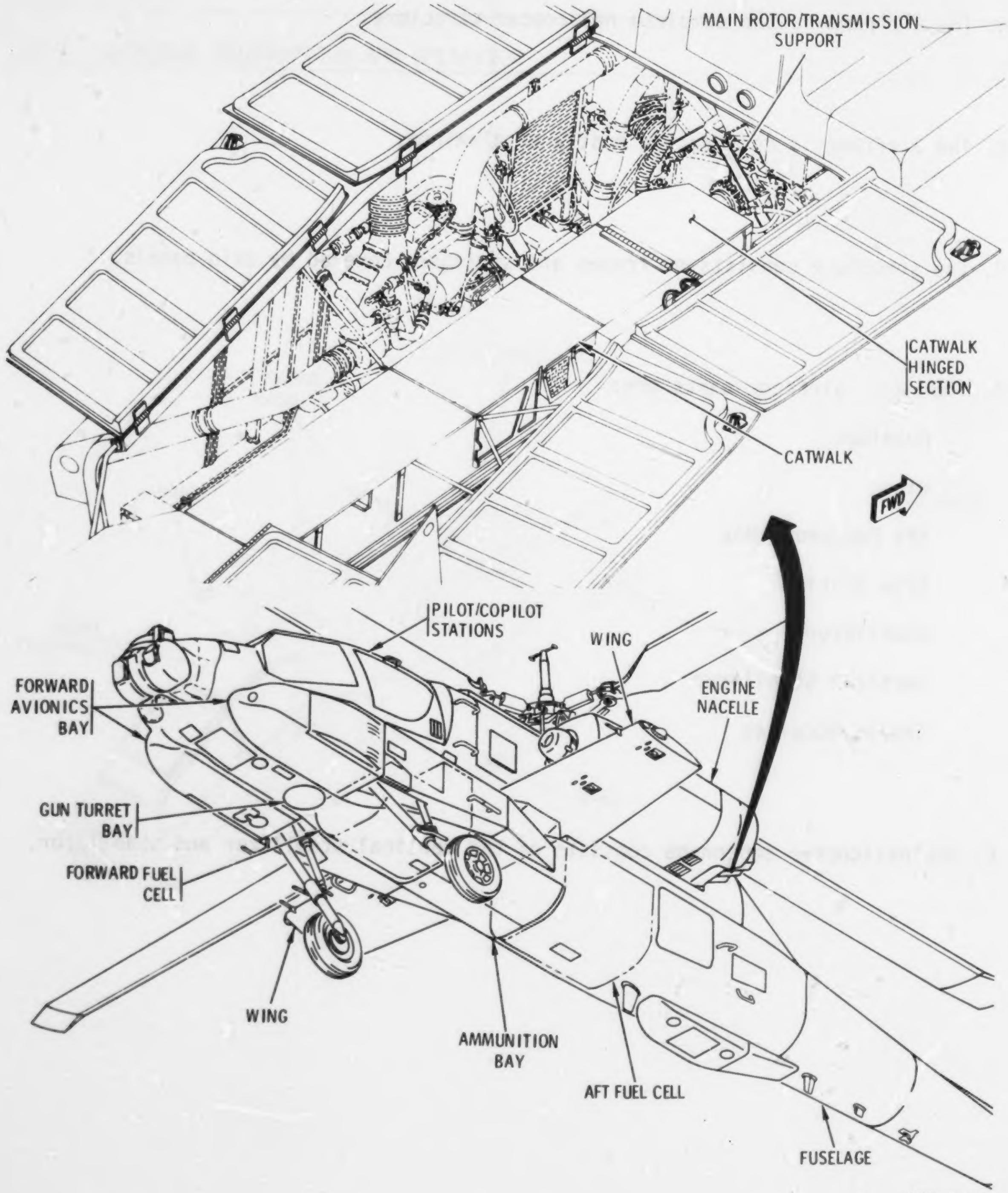
Stabilator

Vertical Stabilizer

Engine Nacelles

E. The helicopter empennage consists of the vertical stabilizer and stabilator.

2-1-2. FUSELAGE DESCRIPTION AND OPERATION 2-1-2



MM04-1424P

2-1-2. FUSELAGE DESCRIPTION AND OPERATION (cont) 2-1-2

A. The fuselage is the main structure of the airframe.

B. The major fuselage components are:

Pilot and Copilot/Gunner (CPG) stations

Wings

Engine nacelles

Forward avionics bays

C. The pilot and CPG stations are in the forward and center fuselage sections.

D. The forward lower section of the fuselage contains the gun turret bay.

E. The center section of the fuselage contains the ammunition bay and fuel cells.

F. The wings and engine nacelles are attached to the fuselage center section.

G. The main landing gear is attached to a cross tube in the center section of the fuselage.

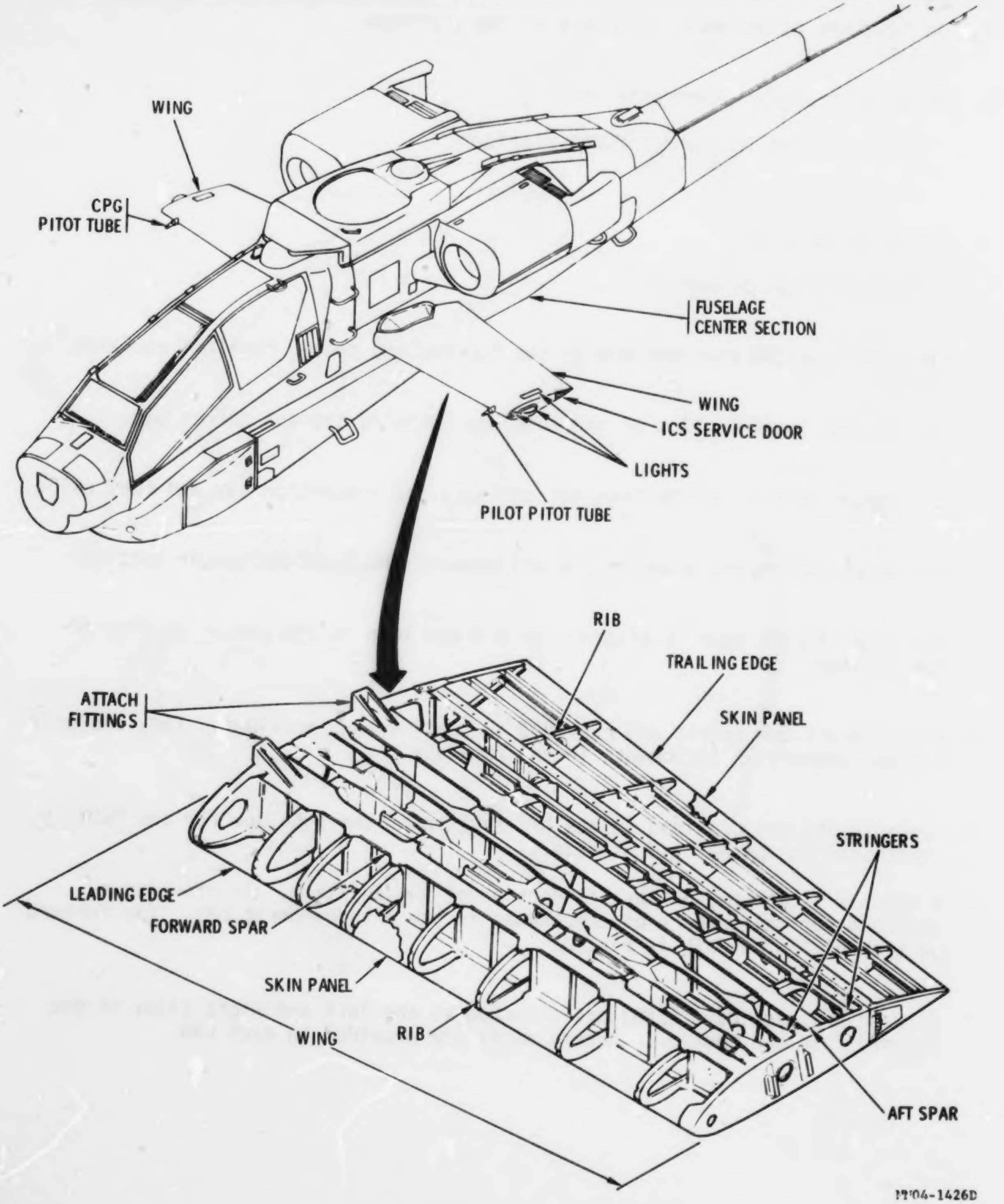
H. Access doors and panels are provided in the fuselage sections. They are used for maintenance of components in the fuselage.

I. Compartments are provided in the aft section of the fuselage for the battery, electronic equipment, and storage.

J. A catwalk is located on the aft section of the fuselage. It provides a platform for maintenance of components in the aft equipment bay. The forward section of the catwalk is hinged.

K. Forward avionics bays (FAB) are attached to the left and right sides of the forward fuselage section. Access doors are provided in each FAB.

2-1-3. WINGS DESCRIPTION AND OPERATION 2-1-3



2-1-3. WINGS DESCRIPTION AND OPERATION (cont) 2-1-3

A. The wings are bolted to the fuselage center section.

B. The wings are constructed of leading edge, trailing edge, spares, stringers, ribs, skin panels, and attachment fittings.

C. Hydraulic, electrical, and mechanical attachments are in each wing. They provide for the installation of stores and auxiliary fuel tanks.

D. Four pylons can be attached to the wings. They support the stores and auxiliary fuel tanks. Go to chapter 16 for pylon information.

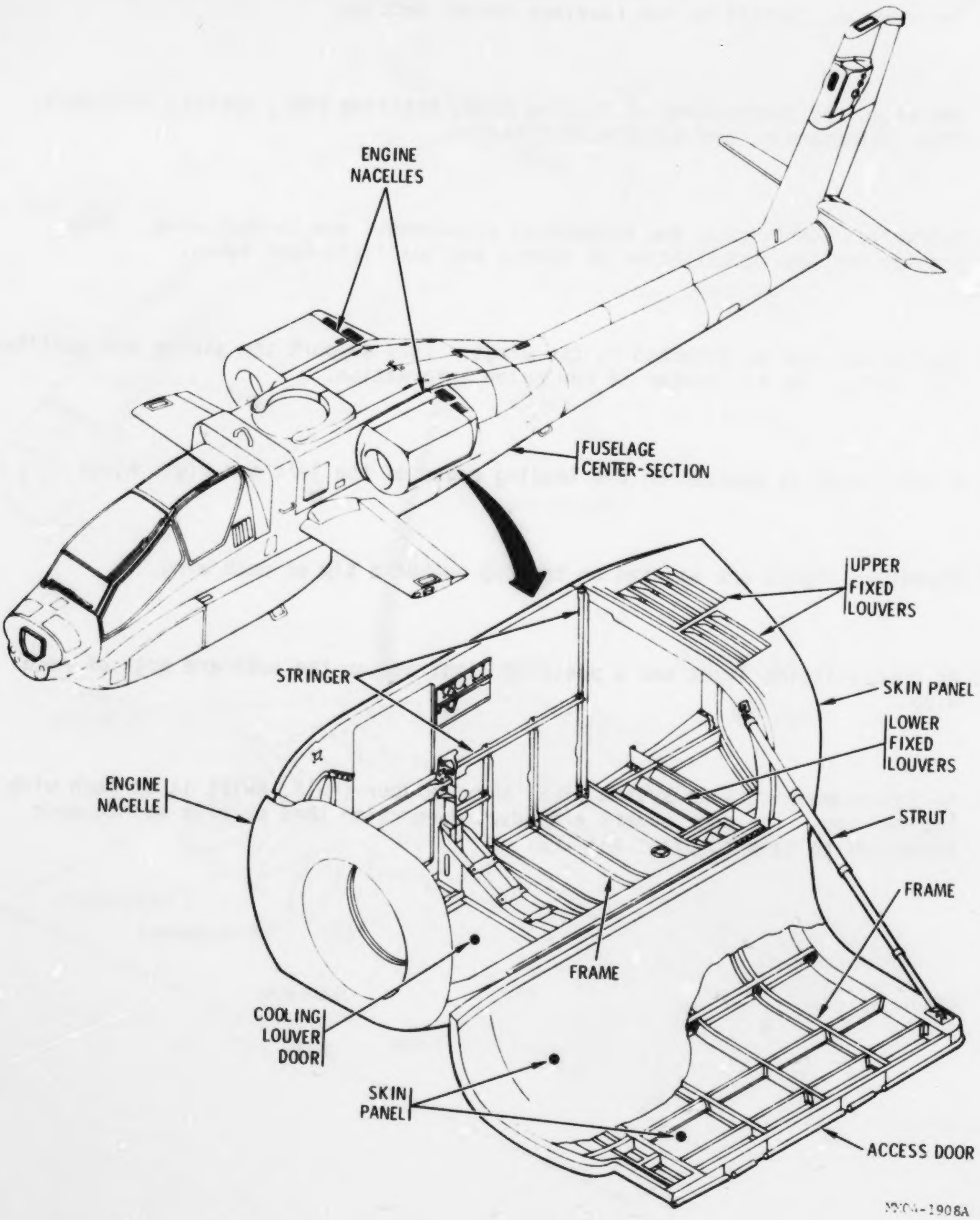
E. A pitot tube is mounted on the leading edges of the left and right wings.

F. Formation lights are mounted on the top outboard tip of each wing.

G. An anticollision light and a position light are on the outboard edge of each wing.

H. An intercommunications system (ICS) service door (LW12, RW12) is on each wing tip fairing. The door covers a headset connection that permits maintenance personnel to talk to pilot and CPG.

2-1-4. ENGINE NACELLES DESCRIPTION AND OPERATION 2-1-4



2-1-4. ENGINE NACELLES DESCRIPTION AND OPERATION (cont) 2-1-4

A. The engine nacelles are bolted to the fuselage center section.

B. The nacelles are constructed of frames, stringers, and skin panels.

C. An access door on each nacelle opens outward and downward. The doors provide a work platform for engine maintenance.

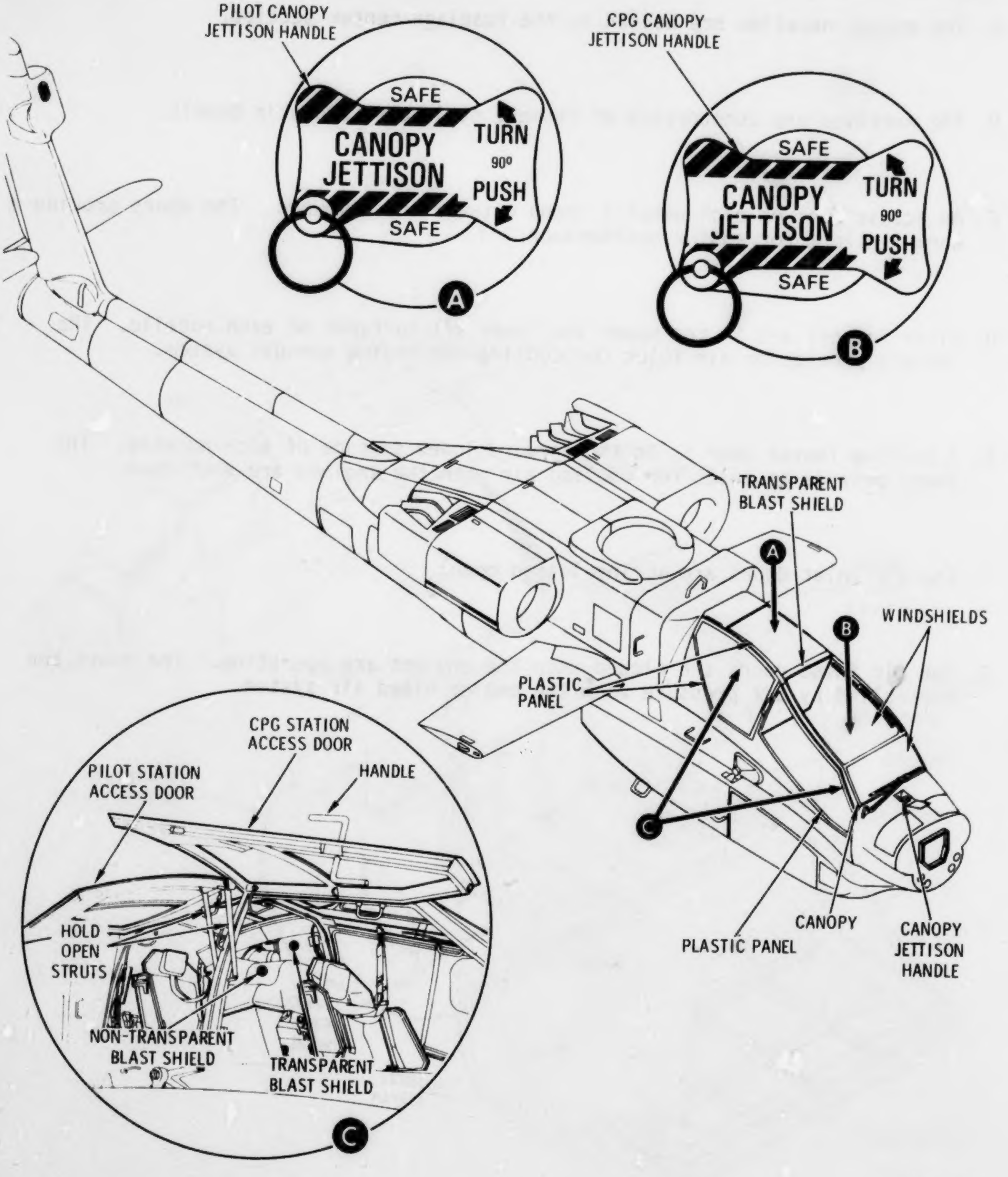
D. Fixed louvers are in the upper and lower aft surfaces of each nacelle. The louvers provide an air inlet for cooling the engine exhaust system.

E. A cooling louver door is in the forward lower surface of each nacelle. The doors provide an inlet for cooling air when the engines are shut down.

F. The air inlet doors are spring-loaded open.

G. The air inlet doors are closed when the engines are operating. The doors are controlled by air pressure from the engine bleed air system.

2-1-5. CANOPY DESCRIPTION AND OPERATION



MM04-1427A

2-1-5. CANOPY DESCRIPTION AND OPERATION (cont) 2-1-5

A. The canopy covers the pilot and CPG stations.

B. Pilot and CPG access doors are at the right side of the canopy.

C. The two access doors are hinged at the top. They open outward and upward. The doors are latched and unlatched by handles on the inside and outside of the doors. A hold-open strut is attached to each door. The struts hold the doors in the open position. The struts are released by a handle at the top of each door.

D. The canopy has five acrylic plastic panels and two laminated glass windshields. Windshield wipers are provided for both windshields.

E. A blast shield separates the pilot and CPG stations.

F. The upper section of the blast shield is made of several laminations of transparent material. The lower section of the blast shield is not transparent.

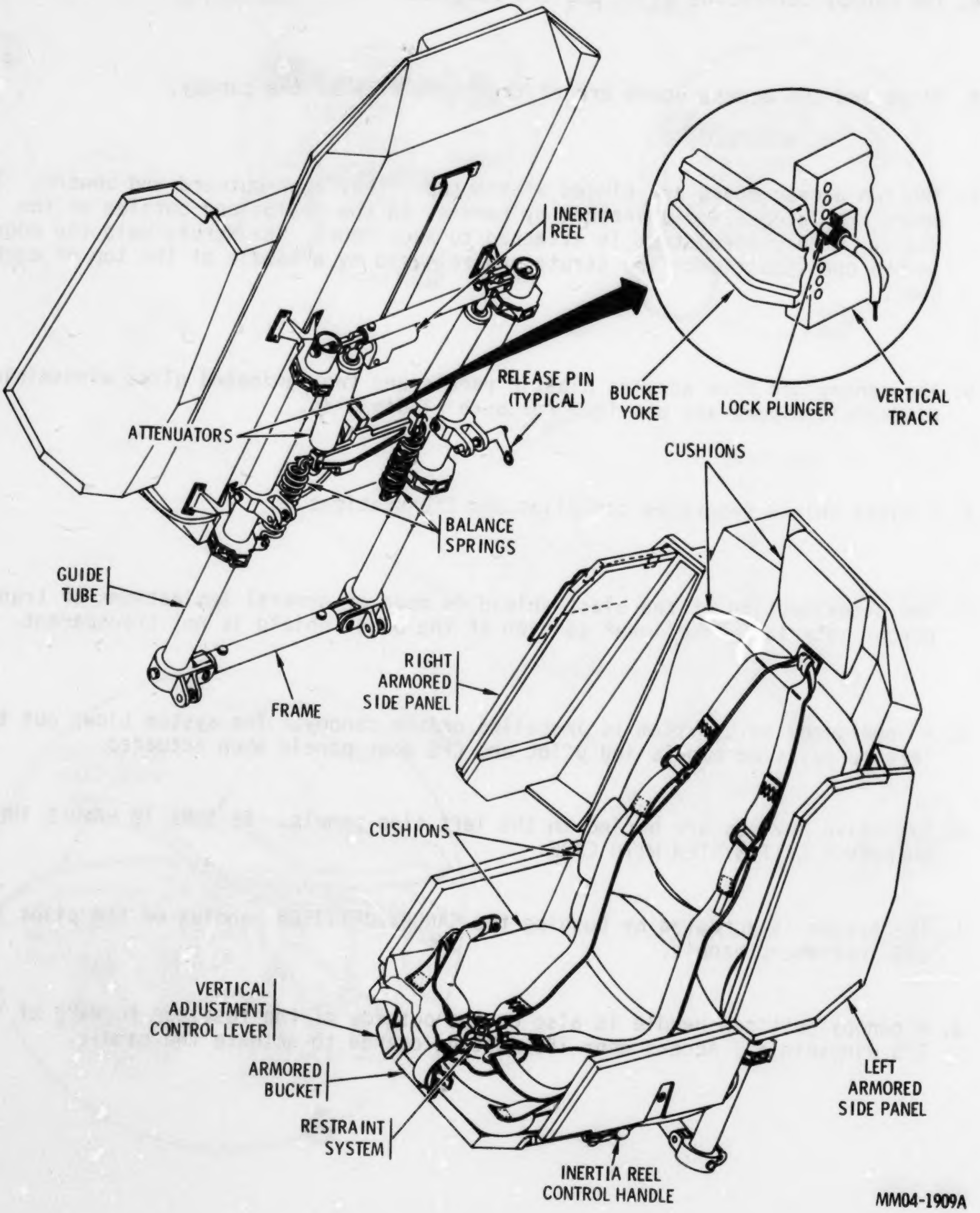
G. An emergency exit system is installed on the canopy. The system blows out the left canopy side panels and pilot and CPG door panels when actuated.

H. Explosive devices are buried in the left side panels. BE SURE TO HANDLE THE EMERGENCY EXIT SYSTEM WITH CARE.

I. The system is actuated by pushing the CANOPY JETTISON handles on the pilot and CPG instrument panels.

J. A canopy jettison handle is also on the outside of the fuselage forward of the CPG windshield. Access door T50 must be opened to actuate the handle.

2-1-6. CREW SEATS DESCRIPTION AND OPERATION



2-1-6. CREW SEATS DESCRIPTION AND OPERATION (cont) 2-1-6

A. Armored seats are provided at the pilot and CPG stations.

B. Each seat has an armored seat bucket, frame, restraint system, seat adjustment, and locking system. A shock-absorbing system is also installed.

C. The seat bucket consists of a bottom and a back with cushions. Armored side panels are attached to the back. The panel on the right side swings back to aid entrance and exit from the stations.

D. The seat bucket is attached to frame guide tubes. The bucket slides up and down on the guide tubes.

E. The seat frame is attached to the station structure by four quick-release pins.

F. Seat vertical adjustment is controlled by an adjustment lever. The lever is installed on the lower right side of the bucket. The lever is spring-loaded to the lock position.

G. The lever is connected by a cable to a lock plunger in the seat adjustment yoke. The plunger engages the vertical track on the bucket.

H. The vertical adjustment lever is pulled to adjust the seat. Pulling on the lever retracts the lock plunger from the track.

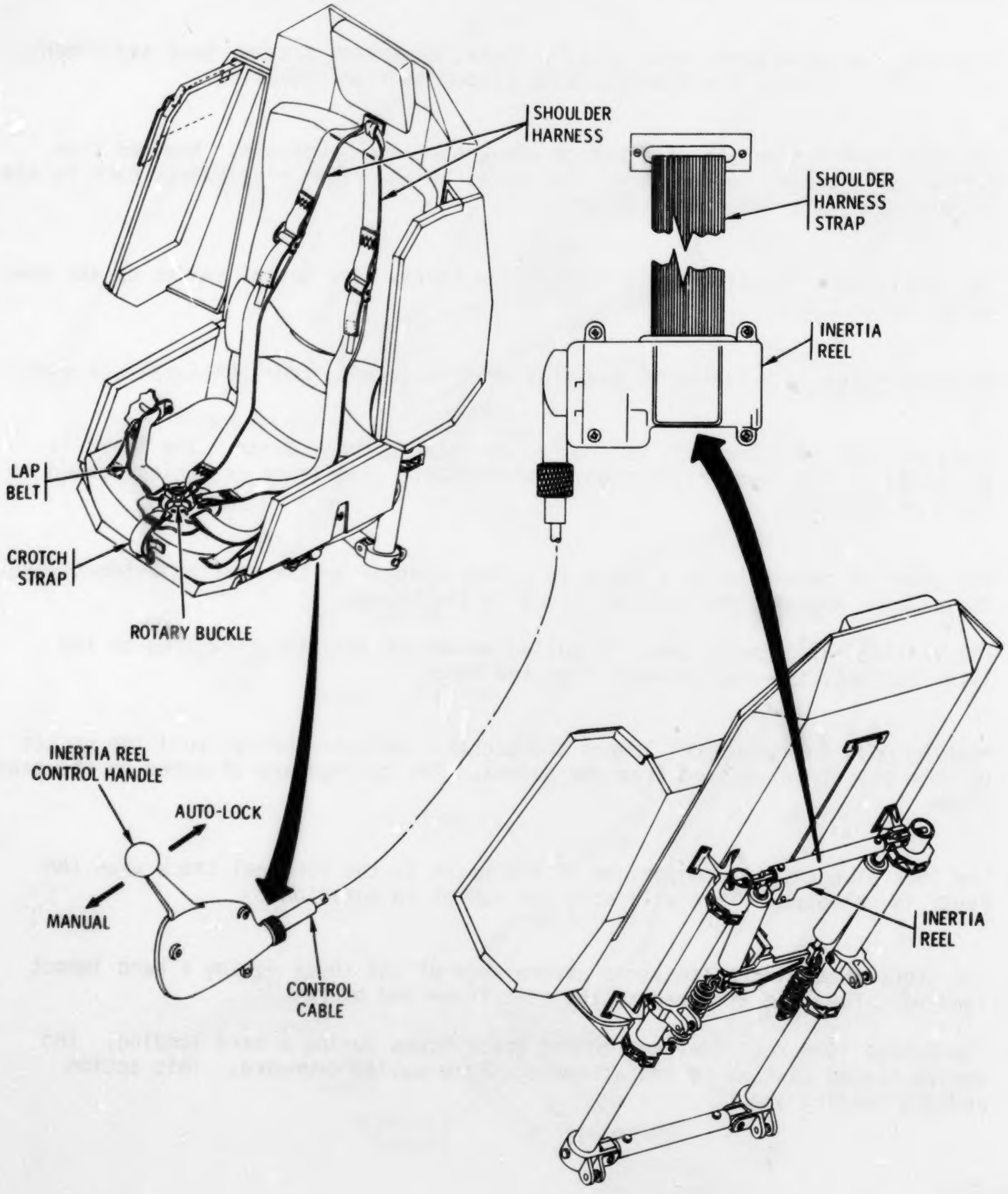
I. Pushing down on the bucket lowers the bucket. Balance springs pull the bucket up when weight is removed from the bucket. The springs are attached to the seat frame.

J. The lock plunger will engage one of the holes in the vertical track when the lever is released. This will hold the bucket in position.

K. Two shock-absorbing attenuators absorb some of the shock during a hard impact landing. They are attached to the seat frame and bucket.

L. The bucket is forced downward on the guide tubes during a hard landing. The spring-loaded pistons of the attenuators are pulled downward. This action reduces landing shock.

2-1-7. SEAT RESTRAINT SYSTEM (SEAT BELTS) DESCRIPTION AND OPERATION 2-1-7



MM04-1910A

2-1-7. SEAT RESTRAINT SYSTEM (SEAT BELTS) DESCRIPTION AND OPERATION (cont) 2-1-7

A. The seat restraint system consists of an inertia reel and shoulder harness, a lap belt, and a crotch strap. A rotary buckle is installed on the crotch strap.

B. To fasten the seat belts, the ends of the shoulder harness and lap belt are inserted into the crotch strap buckle. Turning the rotary buckle in either direction will release the belts.

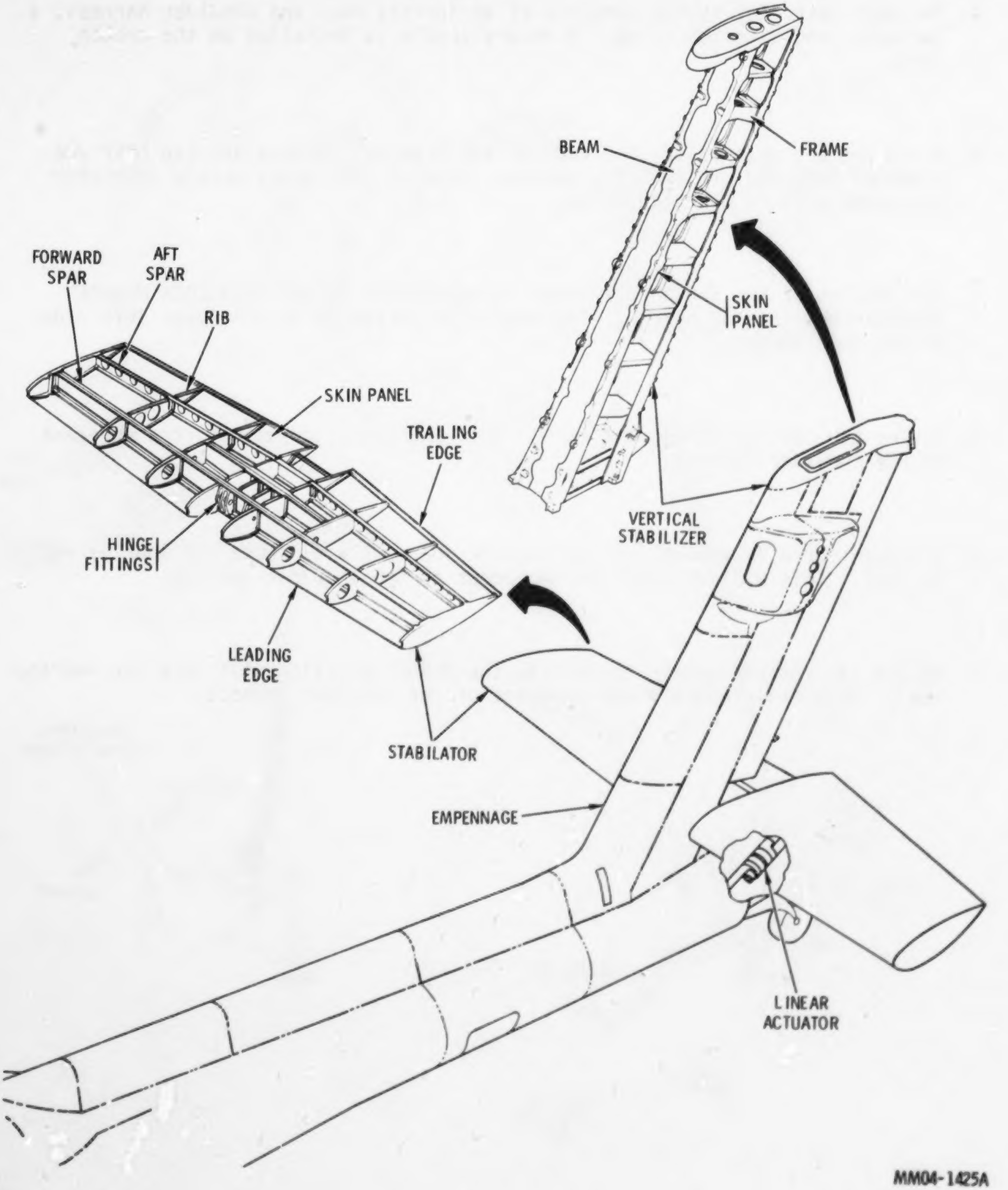
C. The tension of the shoulder harness is controlled by the AUTO-LOCK MANUAL inertia reel control handle. The handle is installed on the lower left side of the seat bucket.

D. Moving the control handle aft to the AUTO-LOCK position allows free movement of the shoulder harness.

E. A sudden force (movement) on the shoulder harness will cause the inertia reel to lock. This will restrain the movement of the shoulder harness.

F. Moving the control handle forward to the MANUAL position will lock the inertia reel. This will restrain the movement of the shoulder harness.

2-1-8. EMPENNAGE DESCRIPTION AND OPERATION 2-1-8



MM04-1425A

2-1-8. EMPENNAGE DESCRIPTION AND OPERATION (cont) 2-1-8

A. The empennage is at the aft end of the airframe.

B. Major components of the empennage are:

Vertical stabilizer

Stabilator

C. The vertical stabilizer is attached to the aft end of the fuselage.

D. The vertical stabilizer consists of beams, frames, and skin panels.

E. The vertical stabilizer supports the tail rotor.

F. The tail rotor intermediate gearboxes are installed on the leading edge of the vertical stabilizer.

G. Fairings, installed on the leading edge of the vertical stabilizer, cover the gearboxes.

H. Retractable steps on both sides of the vertical stabilizer provide access to the tail rotor gearbox and lights on the vertical stabilizer.

I. The stabilator is attached at the lower end of the vertical stabilizer by hinge fittings.

J. The stabilator consists of leading edge, trailing edge, spars, ribs, and skin panels.

K. The stabilator is moved by a linear actuator. The actuator is attached to fittings on the stabilator and on the aft end of the fuselage.

L. The actuator is controlled by digital automatic stabilization equipment (DASE). Go to chapter 9 for more information.

Section II. HELICOPTER ACCESS PROVISIONS

2-2-1. ACCESS PROVISIONS - INSPECTION/REPAIR 2-2-1

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Airframe Repairer's	5180-00-323-4876

Personnel Required:

68G10 Aircraft Structural Repairer

References:

TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. **Inspect all doors, covers, panels, and access fairings shown in paragraphs 2-2-3 thru 2-2-7. Replace the unit if any of the following repairs cannot be made.**

1. **Check for cracks, tears, or punctures.** Repair metal material according to TM 55-1500-204-25/1, using sheet metal repair procedures. Repair Kevlar, (para 2-7-1).

2. **Check mating surfaces of panel and aircraft metal skin panels for loss of paint, scratches, and/or metal erosion caused by chafing.** Repair mating surfaces, (para 2-7-1).

3. **Check for delamination or debonding.** Repair delamination or debonding, para (2-7-1).

4. **Check for corrosion.** Remove corrosion (para 1-5-38).

5. **Check for damaged seals, if installed.** Replace damaged seals (para 2-3-70).

6. **Check for damaged fasteners such as latches, Camlocs, or hinge halves.** Repair damaged latches, Camlocs, or hinge halves (TM 55-1500-204-25/1).

2-2-2. ACCESS PROVISIONS

1. Paragraphs 2-2-2 thru 2-2-10 list access provisions for the helicopter. Illustrations show fastener removal and installation methods. These paragraphs identify areas of the helicopter:

PARAGRAPH	AREA	LOCATOR LETTER
2-2-3	Left Side Access	L
2-2-4	Right Side Access	R
2-2-5	Top Side Access	T
2-2-6	Bottom Side Access	B
2-2-7	Top Side Engine - Work Platform and Equipment Bay	T
2-2-8	Pilot Left and Right Console Panels	L/R
2-2-9	CPG Left and Right Console Panels	L/R
2-2-10	Thermal Insulation, and Hook and Pile Fasteners	L/R

2. Each door, cover, panel, and fairing has a letter and a number. The number is the nearest fuselage station. The letter gives the location. Other letter-identified areas are:

   Wing - W

   Nacelle - N

   Stabilator - S

3. Use the helicopter locator in the illustration to find an access.

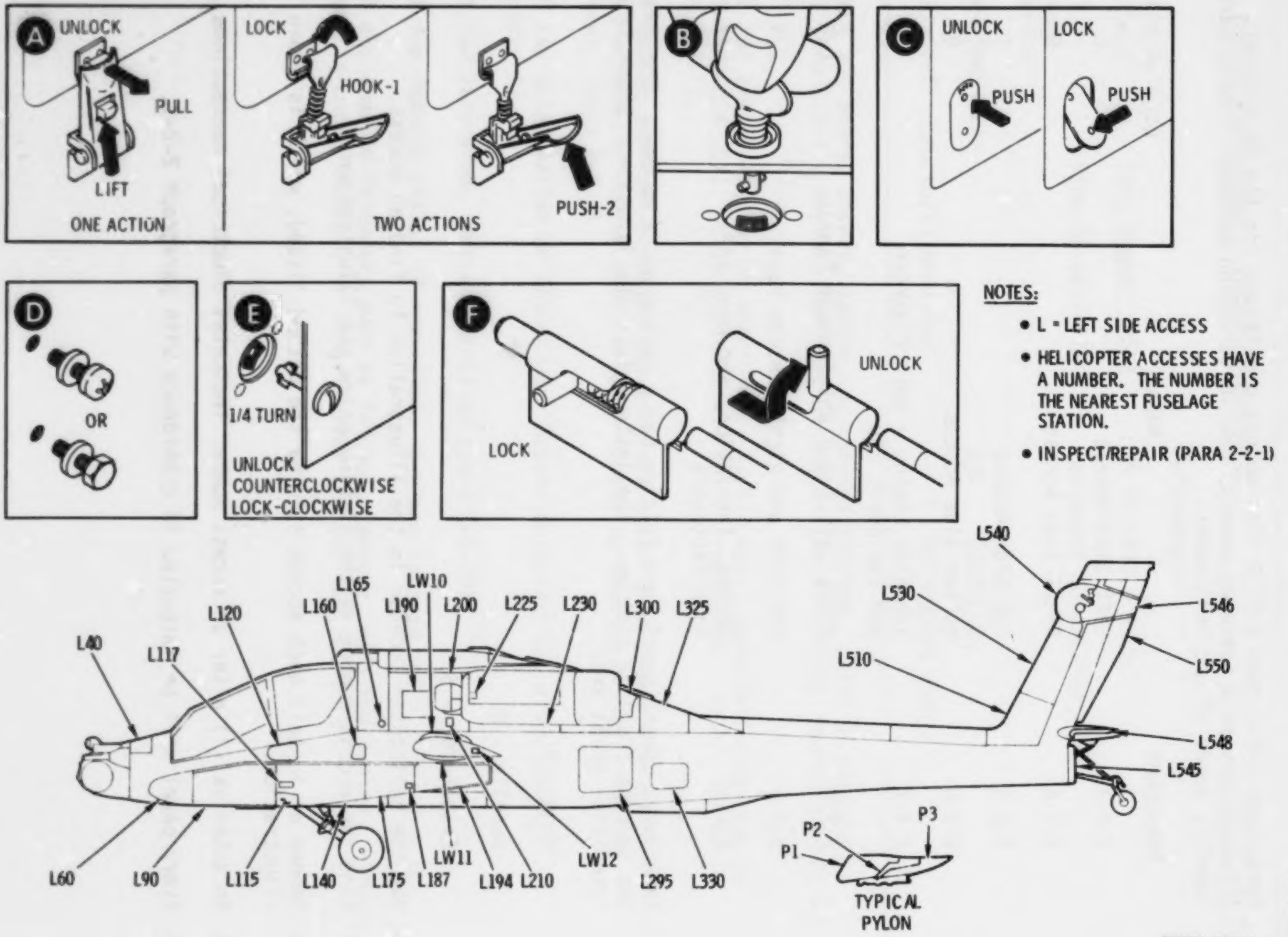
4. Find the access number in the listing below the illustration.

5. Remove or install each access item by the method listed, which is shown in the illustration.

6. An asterisk (*) after an access number indicates electrical connections.

7. Every panel will be inspected in accordance with paragraph 2-2-1.

2-2-3. ACCESS PROVISIONS - LEFT SIDE



NOTES:

- L = LEFT SIDE ACCESS
- HELICOPTER ACCESSES HAVE A NUMBER. THE NUMBER IS THE NEAREST FUSELAGE STATION.
- INSPECT/REPAIR (PARA 2-2-1)

MM04-0001H

2-2-3. ACCESS PROVISIONS - LEFT SIDE (cont)

Access No.	Name	Access to	Remove and Install	Method
L40	Cover	Electronic Equipment	13 Camlocs	E
L60	Fairing	Forward Avionics Bay Nose	47 Screws	D
L90	Door	IHADSS and PNVS Boxes and ICU	7 Latches	C
L115	Door	Mooring Lug	1 Latch, 2 Camlocs	C, E
L117	Door	Rounds Counter	1 Camloc	B
L120	Fairing	Shock Strut Attach Fitting	5 Screws 2 Bolts	D
L140	Fairing	Ammunition Feed Mechanism (fwd)	11 Camlocs	E
L160	Cover	Pilot Collective Bellcrank	17 Screws	D
L165	Cover	Rectifier	5 Screws	D
L175	Fairing	Ammunition Feed Mechanism (aft)	12 Camlocs	E
L187	Door	Hydraulic Return Accumulator Manifold	1 Camloc	E
L190	Door	Hydraulic Oil Level Sight Gage and Controls Access	3 Latches	C
L194	Fairing	Ammunition Feed Mechanism	14 Camlocs	E
L200	Panel	Main Rotor Transmission	10 Camlocs, 1 Latch	E, F
L210	Door	Main Transmission Oil Level Sight Gage	1 Camloc	B

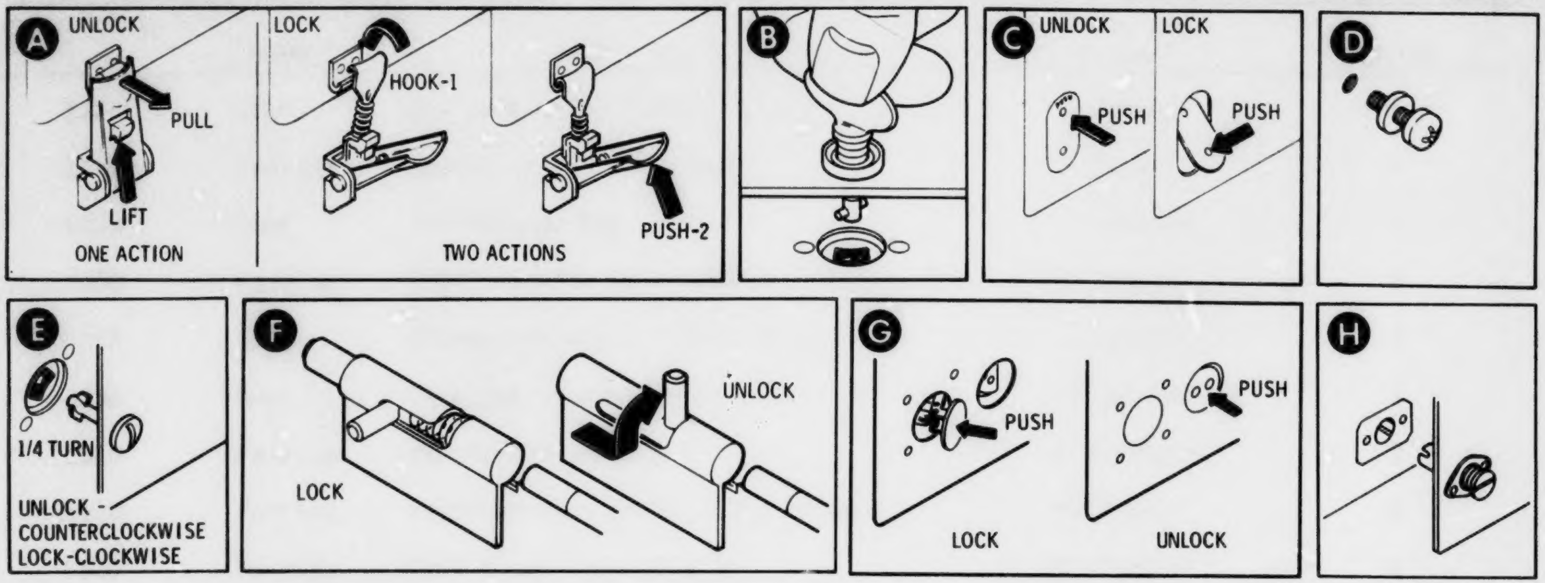
2-2-3. ACCESS PROVISIONS - LEFT SIDE (cont)

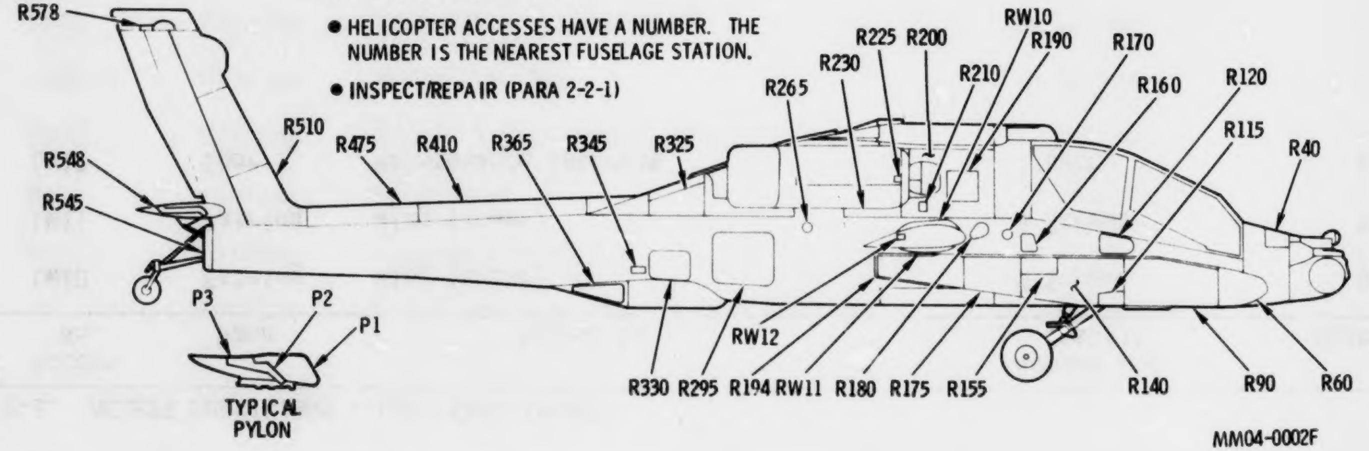
Access No.	Name	Access to	Remove and Install	Method
L225	Door	Oil Tank Level Viewing Glass	1 Camloc	E
L230	Fairing	Hydraulic Heat Exchanger	14 Screws	D
L295	Door	Aft Stowage Bay	2 Latches	A
L300	Fairing	Environmental Control Unit Exhaust	37 Screws	D
L325	Door	Walkway Accesses - Deck Area	2 Latches	A
L330	Door	Fuselage Stowage Compartment	2 Latches	A
L510	Fairing	Vertical Stabilizer	17 Camlocs	E
L530	Fairing	Vertical Stabilizer, Leading Edge	48 Screws	D
L540	Fairing	Tail Rotor Transmission	41 Camlocs	E
L545	Cover	Tailboom	8 Screws	D
L546	Fairing	Tail Rotor Transmission	19 Screws	D
L548	Fairing	Stabilator Tip	8 Screws	D
L550	Fairing	Vertical Stabilizer, Trailing Edge	62 Screws	D
P1	Fairing	Pylon Nose	4 Camlocs	E
P2	Fairing	Station Director	8 Screws	D
P3	Fairing	Extended Range Kit and Multiplexer	14 Camlocs	E

2-2-3. ACCESS PROVISIONS - LEFT SIDE (cont) 2-2-3

Access No.	Name	Access to	Remove and Install	Method
LW10	Fairing	Wing (upper)	9 Screws	D
LW11	Fairing	Wing (lower)	9 Screws	D
LW12	Door	Maintenance Intercom	1 Latch	C

2-2-4. ACCESS PROVISIOMS - RIGHT SIDE





NOTES:

- R - RIGHT SIDE ACCESS
- HELICOPTER ACCESSES HAVE A NUMBER. THE NUMBER IS THE NEAREST FUSELAGE STATION.
- INSPECT/REPAIR (PARA 2-2-1)

2-2-4. ACCESS PROVISIONS - RIGHT SIDE (cont)

Access No.	Name	Access to	Remove and Install	Method
R40	Cover	Electronics Equipment	13 Camlocs	E
R60	Fairing	Forward Avionics Bay Nose	47 Screws	D
R90	Door	Laser, GNVS, MUX, HF Remote	7 Latches	C
R115	Door	Mooring Lug	1 Latch, 2 Camlocs	C, E
R120	Fairing	Shock Strut Attach Fitting	5 Screws 2 Bolts	D
R140	Fairing	Ammunition Feed Mechanism (fwd) (R115 and R155 must be open)	13 Camlocs	E
R155	Door	Fire Extinguisher	1 Latch	C
R160	Door	Refueling Controls	1 PB Latch	G
R170	Cap	Gravity Refueling (fwd)		D
R175	Fairing	Ammunition Feed Mechanism (aft)	12 Camlocs	E
R180	Cover	Pressure Refueling	3 PB Latches	G
R190	Door	Transmission Inspection	3 Latches	C
R194	Fairing	Ammunition Feed Mechanism	14 Camlocs	E, F
R200	Panel	Main Rotor Transmission	10 Camlocs, 1 Latch	E

2-2-4. ACCESS PROVISIONS - RIGHT SIDE (cont)

2-2-4

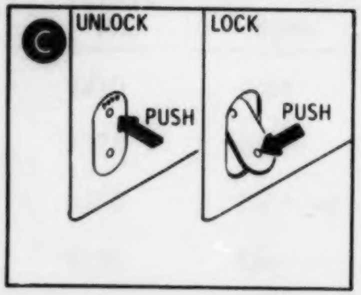
Access No.	Name	Access to	Remove and Install	Method
R210	Door	Transmission Area	1 Camloc	E
R225	Door	Oil Tank Level Viewing Glass	1 Camloc	E
R230	Fairing	Hydraulic Heat Exchanger	14 Screws	D
R265	Cap	Gravity Refueling		
R295	Door	Aft Electronics Equipment	2 Latches	A
R325	Door	Hydraulic Equipment	2 Latches	A
R330	Door	Fuselage Stowage Compartment	2 Latches	A
R345	Door	External Power	1 Latch	C
R365	Panel	ADF Loop (ant)	7 Camlocs	E
R410	Fairing	Tail Rotor Drive Shaft	7 Camlocs	E
R475	Fairing	Tail Rotor Drive Shaft	6 Camlocs	E
R510	Fairing	Vertical Stabilizer	32 Camlocs	E
R545	Cover	Tailboom	8 Screws	D
R548	Fairing	Stabilator Tip	8 Screws	D
R578	Door	Antenna Connection	14 Screws	D

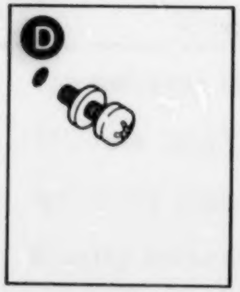
2-2-4. ACCESS PROVISIONS - RIGHT SIDE (cont)

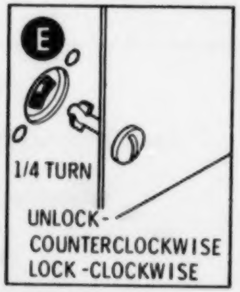
2-2-4

Access No.	Name	Access to	Remove and Install	Method
P1	Fairing	Pylon Nose	4 Camlocs	H
P2	Fairing	Station Director (Strut must be disconnected at bottom)	10 Screws	D
P3	Fairing	Extended Range Kit and Multiplexer	14 Camlocs	E
RW10	Fairing	Wing (upper)	9 Screws	D
RW11	Fairing	Wing (lower)	9 Screws	D
RW12	Door	Maintenance Intercom	1 Latch	C

2-2-5. ACCESS PROVISIONS - TOP SIDE

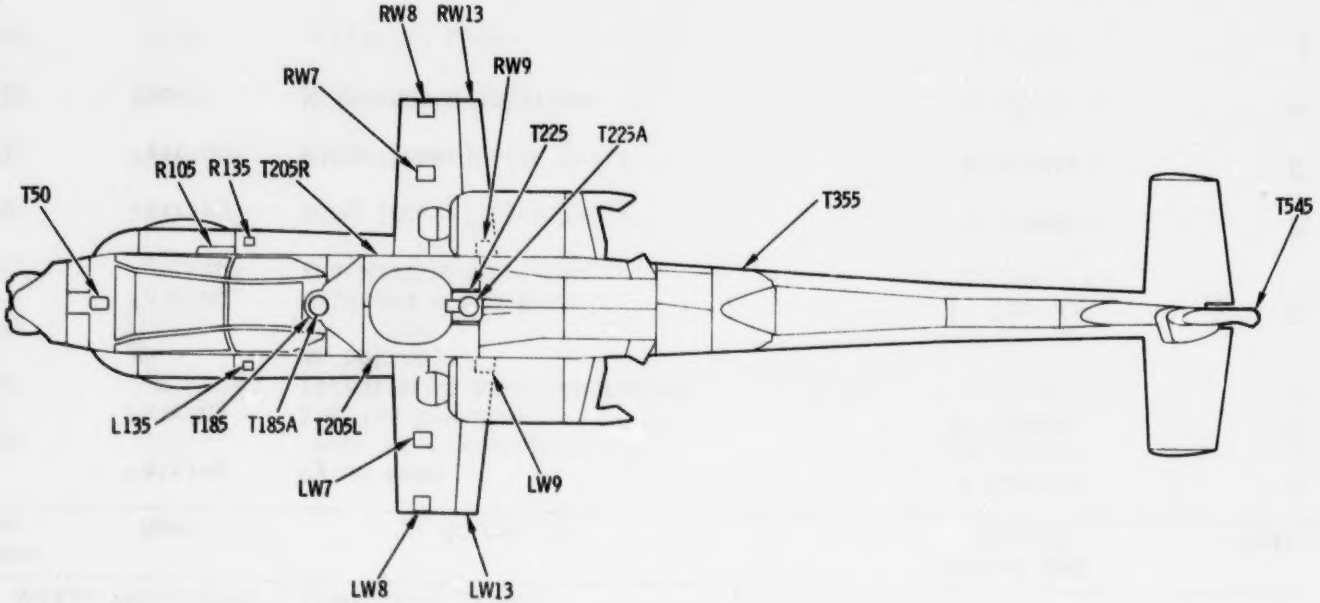






NOTES:

- T = TOP ACCESS
  L = LEFT
  R = RIGHT
  W = WING
  N = NACELLE
- HELICOPTER ACCESSES HAVE A NUMBER. THE NUMBER IS THE NEAREST FUSELAGE STATION.
- INSPECT/REPAIR (PARA 2-2-1)



MM04-0004F

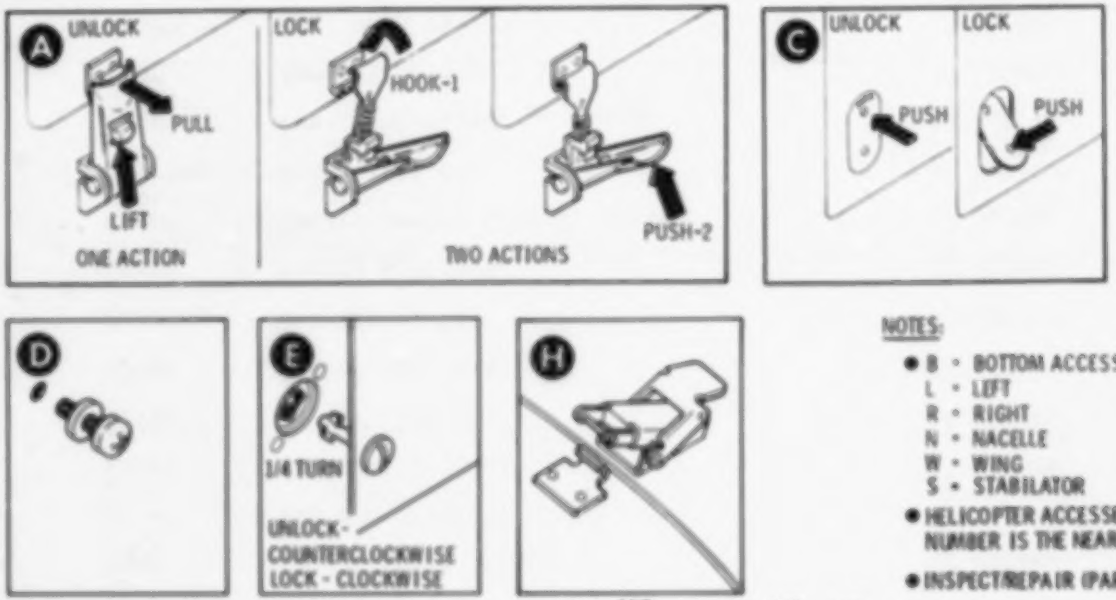
2-2-5. ACCESS PROVISIONS - TOP SIDE (cont)

Access No.	Name	Access to	Remove and Install	Method
L135	Door	Main Landing Gear Shock Strut	6 Screws, 2 Camlocs	D, E
LW7	Cover	Pylon Connector	18 Screws	D
LW8	Cover	Pylon Connector	18 Screws	D
LW9	Cover	Hydraulic lines and Electrical Wiring	16 Screws	D
LW13	Fairing	Hydraulic and Pitot Lines and Electrical Wiring	68 Screws	D
R105	Fairing	Ammunition Chute (R fwd)	7 Screws	D
R135	Door	Main Landing Gear Shock Strut	4 Screw, 2 Camlocs	D, E
RW7	Cover	Pylon Connector	18 Screws	D
RW8	Cover	Pylon Connector	14 Screws	D
RW9	Cover	Hydraulic lines and Electrical Wiring	14 Screws	D
RW13	Fairing	Hydraulic and Pitot Lines and Electrical Wiring	68 Screws	D
T50	Door	Canopy Emergency Release	1 Latch	C
T185	Fairing	Doghouse	4 Screws, 16 Camlocs	D, E
T185A	Cover	Doghouse	11 Screws	D
T225	Fairing	Main Rotor Shaft	8 Screws, 10 Camlocs	D, E

2-2-5. ACCESS PROVISIONS - TOP SIDE (cont)

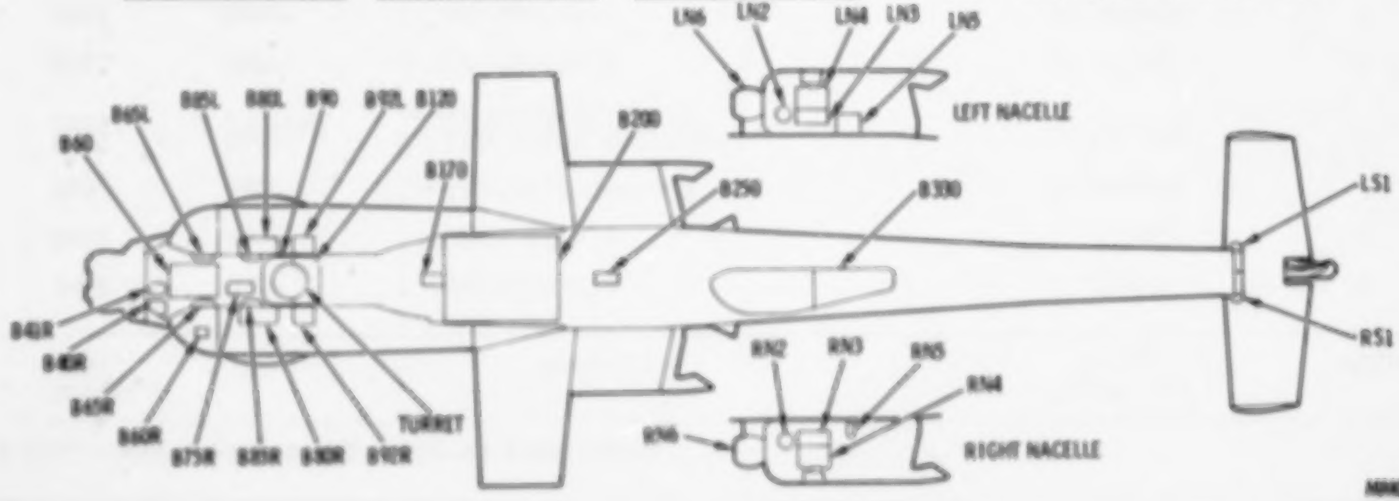
Access No.	Name	Access to	Remove and Install	Method
T225A	Cover	I/R Jammer	4 Camlocs 3 Screws	E D
T355*	Fairing	Tail Rotor Shaft	24 Camlocs	E
T205L	Fairing	Main Rotor Shaft	11 Screws 6 Camlocs	D, E
T205R	Fairing	Main Rotor Shaft	11 Screws 5 Camlocs	D, E
T545*	Fairing	Vertical Stabilizer	16 Screws	D

2-2-6. ACCESS PROVISIONS - BOTTOM SIDE



NOTES:

- B - BOTTOM ACCESS
  L - LEFT
  R - RIGHT
  N - NACELLE
  W - WING
  S - STABILATOR
- HELICOPTER ACCESSES HAVE A NUMBER. THE NUMBER IS THE NEAREST FUSELAGE STATION.
- INSPECT/REPAIR (PARA 2-2-1)



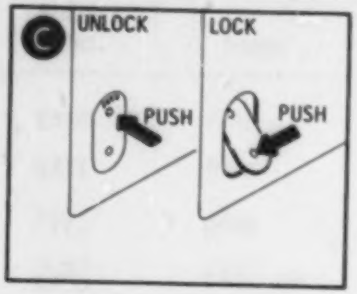
2-2-6. ACCESS PROVISIONS - BOTTOM SIDE (cont) 2-2-6

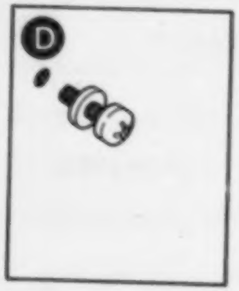
Access No.	Name	Access to	Remove and Install	Method
B40R	Door	Flight Controls	11 Screws	D
B41R	Door	Flight Controls	11 Screws	D
B60	Door	Cyclic Stick Controls	40 Screws	D
B60R	Door	Utility Light and Ground Power Receptacle	2 Camlocs	E
B65L	Door	Flight Controls	17 Screws	D
B65R	Door	Flight Controls	17 Screws	D
B75R	Door	Cyclic Stick	22 Screws	D
B80L	Cover	FAB and Controls	21 Screws	D
B80R	Cover	FAB and Controls	21 Screws	D
B85L	Cover	Flight Controls	12 Screws	D
B85R	Cover	Flight Controls	21 Screws	D
B90	Fairing	Gun Turret Bay	12 Camlocs	E
B92L	Cover	Flight Controls	12 Screws	D
B92R	Cover	Environmental Control System	12 Screws	D
B120	Fairing	Gun Turret Bay	14 Camlocs	E
B170	Door	Fuel Dump Valve	15 Screws	D
B200	Door	Ammunition Bay	8 Latches	A
B250	Door	Fuel Dump Valve	8 Screws	D

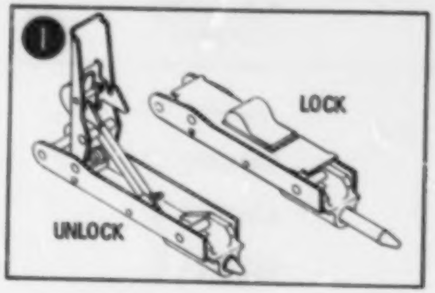
2-2-6. ACCESS PROVISIONS - BOTTOM SIDE (cont)

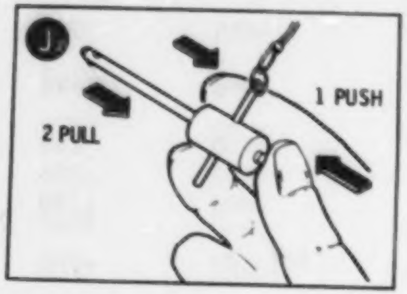
Access No.	Name	Access to	Remove and Install	Method
B330*	Fairing	Doppler Radar and Radar Altimeters	15 Camlocs 2 Screws	D, E
LN2*	Door	Water Wash	5 Camlocs	E
LN3	Door	Engine	4 Camlocs	E
LN4	Door	Engine	6 Camlocs	E
LN5	Door	Engine	1 Latch	C
LN6*	Fairing	Engine Nose Gearbox	4 Latches	H
RN2*	Door	Water Wash	5 Camlocs	E
RN3	Door	Engine	4 Camlocs	E
RN4	Door	Engine	6 Camlocs	E
RN5	Door	Engine	1 Latch	C
RN6*	Fairing	Engine Nose Gearbox	4 Latches	H
LS1*	Door	Stabilator	4 Camlocs	E
RS1*	Door	Stabilator	4 Camlocs	E

2-2-7. ACCESS PROVISIONS - TOP SIDE ENGINE WORK PLATFORM AND EQUIPMENT BAY



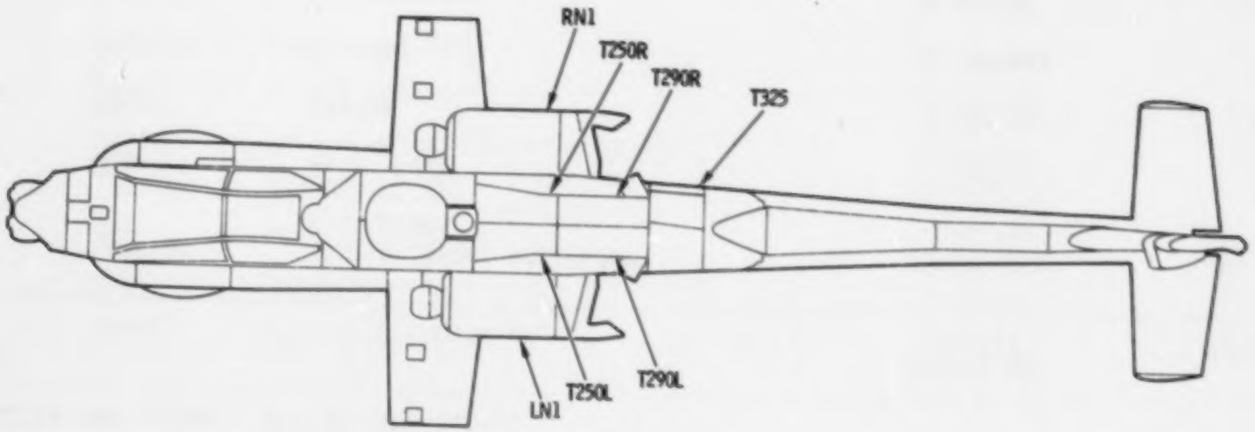






NOTES:

- T - TOP ACCESS
  L - LEFT
  R - RIGHT
  W - WING
  N - NACELLE
- HELICOPTER ACCESSES HAVE A NUMBER. THE NUMBER IS THE NEAREST FUSELAGE STATION.
- INSPECT/REPAIR (PARA 2-2-1)

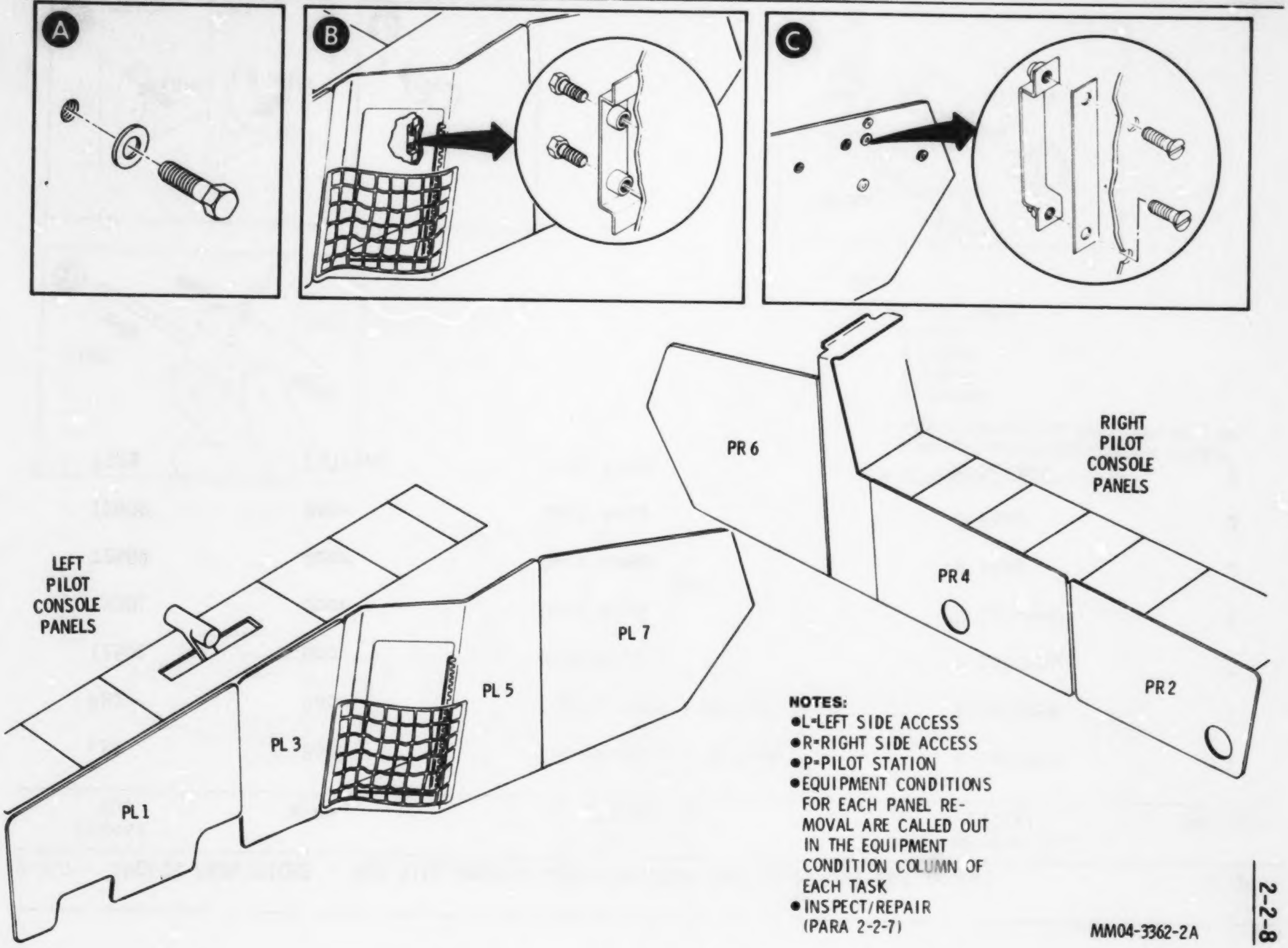


MM04-1429C

2-2-7. ACCESS PROVISIONS - TOP SIDE ENGINE WORK PLATFORM AND EQUIPMENT BAY (cont) 2-2-7

Access No.	Name	Access to	Remove and Install	Method
LN1	Door	Engine Work Platform	2 Latches	I
RN1	Door	Engine Work Platform	2 Latches	I
T250L	Door	Deck Area	3 Latches	C
T290L	Door	Deck Area	3 Latches	C
T250R	Door	Deck Area	2 Pins	J
T290R	Door	Deck Area	2 Pins	J
T325	Fairing	Deck Area	30 Screws	D

2-2-8. PILOT LEFT AND RIGHT CONSOLE PANELS REMOVAL/INSTALLATION



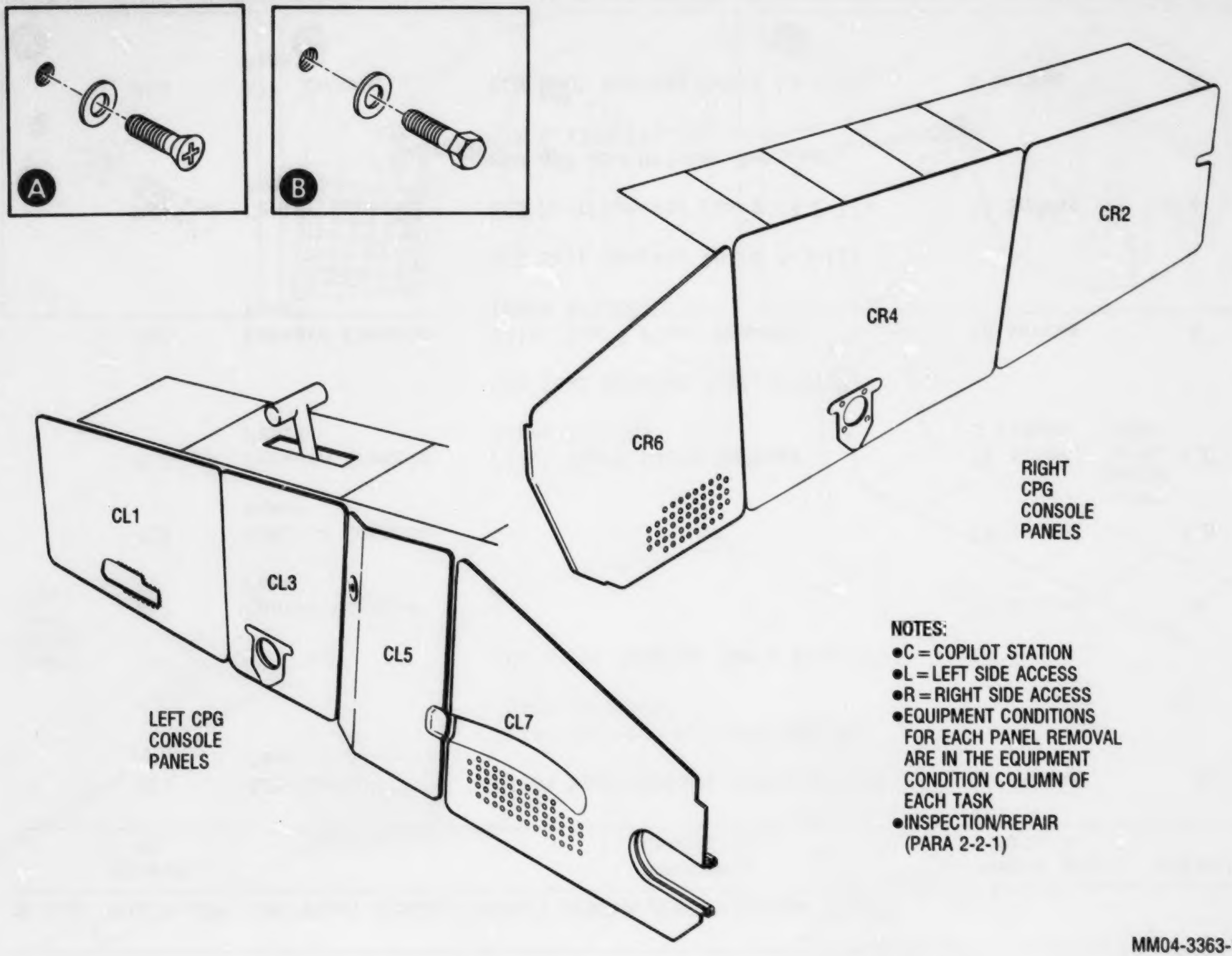
NOTES:
- L=LEFT SIDE ACCESS
- R=RIGHT SIDE ACCESS
- P=PILOT STATION
- EQUIPMENT CONDITIONS FOR EACH PANEL REMOVAL ARE CALLED OUT IN THE EQUIPMENT CONDITION COLUMN OF EACH TASK
- INSPECT/REPAIR (PARA 2-2-7)

MM04-3362-2A

2-2-8. PILOT LEFT AND RIGHT CONSOLE PANELS REMOVAL/INSTALLATION (cont)

Access No.	Access	Reference Condition	Remove and Install	Method
PL1	Aft Console Panel	Pilot Seat Removed (para 2-3-12) Pilot Collective Cover Removed (para 11-3-51) ECS Valve Removed (para 13-2-17)	9 Screws	A
PL3	Center Console Panel	---	10 Screws	A
PL5	Mapcase Console Panel	---	17 Screws	A,B
PL7	Forward Console Panel	Pilot Scuff Plate Removed (para 2-3-88) CPG Seat Removed (para 2-3-12)	22 Screws, 3 Clamps	A,C
PR2	Forward Console Panel	Pilot Scuff Plate Removed (para 2-3-88) CPG Seat Removed (para 2-3-12)	14 Screws	A
PR4	Center Console Panel	ECS Duct Removed (para 13-2-17) HDU and HDU Holster Removed (TM 9-1270-221-23)	13 Screws	A
PR6	Aft Console Panel	ECS Duct Removed (para 13-2-17)	9 Screws	A

2-2-9. CPG LEFT AND RIGHT CONSOLE PANELS REMOVAL/INSTALLATION



NOTES:
- C = COPILOT STATION
- L = LEFT SIDE ACCESS
- R = RIGHT SIDE ACCESS
- EQUIPMENT CONDITIONS FOR EACH PANEL REMOVAL ARE IN THE EQUIPMENT CONDITION COLUMN OF EACH TASK
- INSPECTION/REPAIR (PARA 2-2-1)

MM04-3363-1A

2-2-9. CPG LEFT AND RIGHT CONSOLE PANELS REMOVAL/INSTALLATION (cont) 2-2-9

Access No.	Access	Reference Condition	Remove and Install	Method
CL1	Aft Console Panel	CPG Seat Removed (para 2-3-12)	9 Screws, 2 Bolts	A,B
		CPG Collective Cover Removed (para 11-3-51)		
CL3	Lower Aft Console Panel	ECS Valve Removed (para 13-2-17)	13 Screws	A
CL5	Center Console Panel	---	15 Screws	A
CL7	Forward Console Panel	CPG Seat Removed (para 2-3-12)	22 Screws	A
		CPG Scuff Plate Removed (para 2-3-89)		
CR2	Aft Console Panel	---	11 Screws	A
CR4	Center Console Panel	HDU and HDU Holster Removed (TM 9-1270-221-23)	20 Screws	A
		ECS Valve Removed (para 13-2-17)		
CR6	Forward Console Panel	CPG Seat Removed (para 2-3-12)	13 Screws	A
		CPG Scuff Plate Removed (para 2-3-89)		

2-2-10. THERMAL INSULATION AND HOOK AND PILE FASTENER REMOVAL/INSTALLATION 2-2-10

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR E. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Shears, Bent Trim	5110-00-203-9642
Respirator, Air Filtering	4240-00-022-2524
Goggles	4240-00-052-3776
Gloves, Rubber	8415-00-266-8677
Apron, Impermeable	8415-00-082-6108

Materials/Parts:

(E33)	Naphtha
(E68)	Brush
(E122)	Adhesive

Personnel Required:

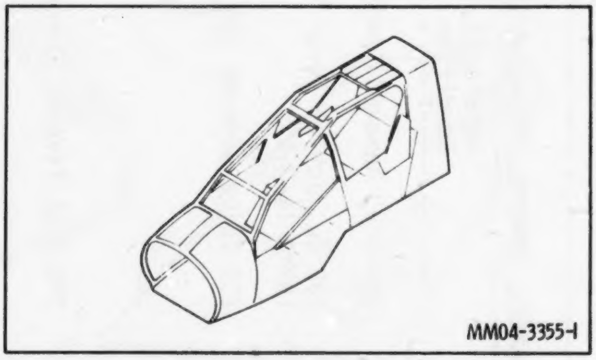
67R10 Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

NOTE

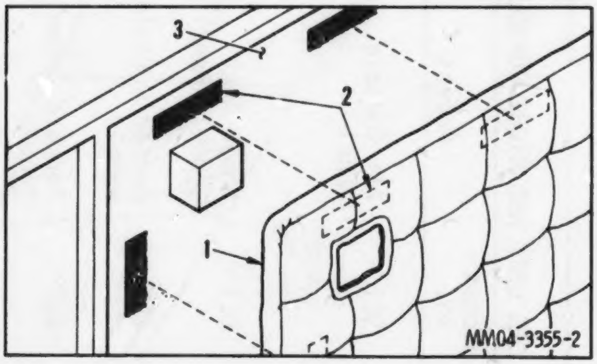
- This task is typical for removing and replacing thermal insulation panels.
- Some thermal insulation panels may have cut-outs for electrical wiring, crew ECS outlets, or defog tubing.



A. REMOVAL

1. **Enter pilot or CPG station (para 1-7-1). Observe all safety precautions.**

2. **Removal thermal insulation (1).** Gently separate hook and pile fasteners (2) attaching insulation (1) to bulkhead (3).



GO TO NEXT PAGE

2-2-10. THERMAL INSULATION AND HOOK AND PILE FASTENER REMOVAL/INSTALLATION (cont) 2-2-10

B. CLEANING

Wipe insulation and bulkhead with a clean rag.

C. INSPECTION

1. Check hook and pile fasteners for tears and security of attachment. Replace if torn or insecurely attached.

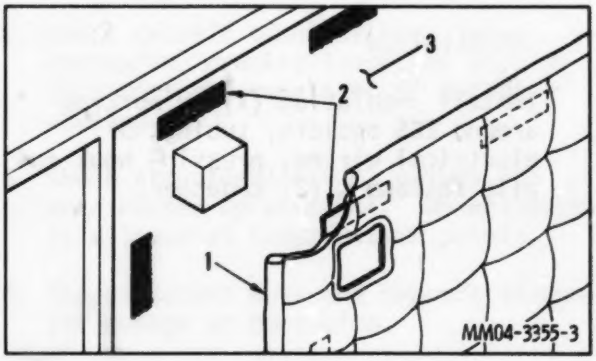
2. Check insulation for tears or damage. None allowed.

D. REPAIR

WARNING

Naphtha and adhesive are flammable and toxic. Use in a well ventilated area away from open flames. Naphtha and adhesive can cause eye and skin irritation. If naphtha or adhesive comes in contact with eyes or skin, flush with water. If irritation occurs, seek medical aid.

1. Remove hook and pile fasteners (2) from bulkhead (3) or thermal insulation (1).
   a. Apply naphtha (E33) to edges of hook and pile fastener (2) with brush (E68). Peel off hook and pile fastener (2). Wear rubber gloves, goggles, impermeable apron, and air filtering respirator.
   b. Apply naphtha (E33) to rags and thoroughly clean area of adhesive or residue.



GO TO NEXT PAGE

2. Install fasteners (2).

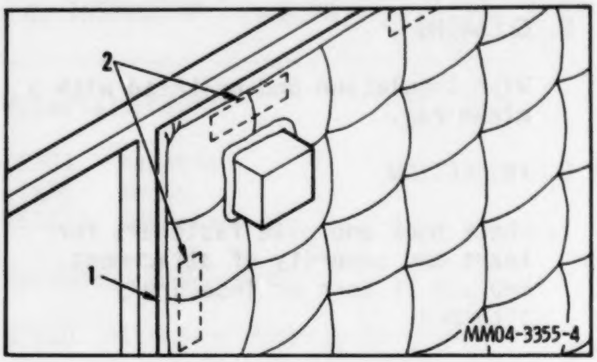
   a. Cut fastener (2) to desired length. Use shears.

WARNING

Naphtha and adhesive are flammable and toxic. Use in a well ventilated area away from open flames. Naphtha and adhesive can cause eye and skin irritation. If naphtha or adhesive comes in contact with eyes or skin, flush with water. If irritation occurs, seek medical aid.

   b. Apply adhesive (E122) with brush (E68) onto back of fastener (2). Allow adhesive (E122) to air dry 10 to 15 minutes. Apply a second coat and allow it to dry. Wear rubber gloves, goggles, apron and respirator.

   c. Position fastener (2) in place and press firmly. Allow adhesive (E122) to cure 4 hours before installing insulation (1).



E. INSTALLATION

Install insulation (1) by working around ECS outlets, tubing, or electrical wiring, pressing hook and pile fasteners (2) together.

END OF TASK

Section III. FUSELAGE MAINTENANCE

2-3-1. FUSELAGE INSPECTION 2-3-1

NOTE

Refer to para 2-3-2 for damage limits and corrective action.

A. FUSELAGE

1. Check skin panels, access covers, doors, and fairings for corrosion, cracks, tears, punctures, and loose or missing fasteners.
2. Check honeycomb panels for cracks, tears, or punctures.
3. Check step assemblies for corrosion, cracks, and condition of antiskid coating.
4. Check main landing gear cross-tube for corrosion, scratches, or nicks.
5. Check structural attach points for wear caused by movement. No movement is allowed at these attach points.
6. Check ammunition magazine strut assembly for dents, nicks, or scratches.
7. When electrical connectors are disconnected, inspect for foreign objects, corroded, bent, broken, loose, or missing pins. Check connector operation for smooth, positive locking action. Check wire harnesses for chafing and loose installation. Refer to TM 55-1500-323-24 for wire and connector repair.

B. COCKPITS

1. Check transparent panels for scratches, pitting, or cracks.
2. Check pilot canted bulkhead for cracks, tears, or corrosion.
3. Check fittings, castings, and forgings for corrosion or cracks.
4. Check nontransparent barrier for cracks, tears, punctures, debonding, and delaminating.
5. Check structural attach points for wear caused by movement. No movement is allowed at these attach points.

C. TRANSMISSION DECK

1. Check for corrosion, holes, cracks, tears, and loose or missing fasteners.
2. Check catwalk assembly for corrosion, cracks, loose, or missing fasteners and condition of antiskid coating.
3. Check structural attach points for wear caused by movement. No movement is allowed at these attach points.
4. Check support base and support struts for damage or corrosion.

GO TO NEXT PAGE

2-3-1. FUSELAGE INSPECTION (cont) 2-3-1

5. Check aft equipment bay area.

   a. Open access doors T250L, T250R, T290L, T290R, L325, L200 and R200 (para 2-2-2).

   b. Identify any leak source and repair.

   c. If fluid or dirt has accumulated in sufficient quantity to form pools, puddles or, excessive deposits, clean area (para 1-5-36).

NOTE

Spraying/misting is evidenced by a film of oil covering a general area. Film may be on upper or lower surfaces of an area. In general, oil leakage shall be kept to a minimum, if not completely stopped.

   d. If excessive oil/fuel is detected and the source is unknown, clean area (para 1-5-36) and conduct a 15 minute ground run. Immediately check for leaks. Any fuel leaks must be repaired prior to aircraft operation. Any oil leak, static or dynamic, causing pooling/puddling or spraying/misting must be repaired prior to next flight.

   e. Secure access doors T250L, T250R, T290L, T290R, L325, L200 and R200 (para 2-2-2).

D. GENERAL (Fittings, Casting, Forging)

1. Nicks, scratches, and gouges which do not develop into cracks are generally acceptable if sharp edges can be blended and damage does not interfere with operational characteristics of the affected components.

2. If blending is required, remove minimal material to smooth off sharp edges.

3. Cracks are generally not acceptable. Use approved non-destructive testing methods to determine if cracks exist.

END OF TASK

2-3-2. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR 2-3-2

This task covers: A. DAMAGE LIMITS CATEGORIES B. TYPES OF DAMAGE (EXAMPLES): LIMITS AND ACTION C. CORROSION D. IMPACTOR FATIGUE DAMAGE

A. DAMAGE LIMITS CATEGORIES

The following damage limits categories are assigned to help you establish repairable limits for particular areas and parts. Applicable categories are listed only for a damaged area or part.

Category	Description
A	Negligible damage to be repaired at first opportunity
B	Minor damage requiring immediate action with temporary repair
C	Major damage requiring immediate repair/replacement

B. TYPES OF DAMAGE (EXAMPLES): LIMITS AND ACTION

Category	Limits	Action
1. Type: Skin Corrosion		
A	Less than 20 percent of skin thickness and no more than 25 percent of panel area	Remove corrosion (para 1-5-38).
B	More than 20 percent of skin thickness and less than 50 percent of panel with no effect on adjacent structure	Patch repair (TM 55-1500-204-25/1) not to exceed 25 percent of total panel.
C	More than 50 percent of skin thickness	Replace affected area with patch repair (TM 55-1500-204-25/1).
2. Type: Skin or Sheet Metal Holes, Cracks or Tears		
A	No negligible limits allowed	---
B	No minor limits allowed	---
C	No cracks or tears more than 25 percent of shortest skin panel dimension	Clean up and patch repair (TM 55-1500-204-25/1).
	No holes greater than 3.00-inch diameter (cleanup can be no closer than 2.00 inches to support structure).	Clean up and patch repair (TM 55-1500-204-25/1).

GO TO NEXT PAGE

2-3-2. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR (cont) 2-3-2

C. CORROSION

Category		Limits	Action
1. Structural			
	A	Less than 10 percent of material thickness across 25 percent of cross section.	Remove corrosion (para 1-5-38).
	B	Greater than 10 percent of material thickness but less than 50 percent of cross section.	Patch repair (TM 55-1500-204-25/1) as long as area remaining allows attaching repair.
	C	Greater than minor damage.	Replace.
2. Castings, Forgings			
	A	Less than 25 percent of cross section and less than 10 percent of thickness or **0.040-inch** depth.	Repair corroded area (TM 55-1500-204-25/1).
	B	Exceeds A.	Replace.
3. Fasteners, Bearings, and Bushings			
	A	Removable or allowed to remain without affecting size or function.	Repair (TM 55-1500-204-25/1).
	B	Exceeds A.	Replace.
4. Covers and Doors			
	A	Not applicable	
	B	Less than 10 percent of material thickness and less than **4.00 square inches** after cleanup.	Repair (TM 55-1500-204-25/1).
	C	Exceeds B or repairs will affect function.	Replace.

GO TO NEXT PAGE

2-3-2. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR (cont) 2-3-2

Category	Limits	Action
5. Step Assembly		
B	Less than 10 percent of wall thickness or 25 percent of tube circumference in length or width after cleanup	Repair (TM 55-1500-204-25/1).
C	Exceeds B	Replace.
6. Main Landing Gear Cross Tube		
A	Less than 25 percent of cross section and less than 10 percent of thickness or **0.040-inch** depth (whichever is less). (Damage must clear fastener holes or threads by **0.050-inch** minimum.)	Repair (TM 55-1500-204-25/1).
B	Exceeds A	Replace.
7. Engine Mount Supports		
A	Less than 25 percent of cross section and less than 10 percent of thickness or **0.040-inch** in depth. (Damage must clear fillets and fastener holes or counterbores by **0.50-inch** minimum.)	Repair (TM 55-1500-204-25/1).
B	Exceeds A	Replace.

GO TO NEXT PAGE

D. IMPACT OR FATIGUE DAMAGE

Category	Limits	Action
1. Skin or Sheet Metal Holes, Cracks, or Tears		
B	Holes: less than 3.00-inch diameter. (Cleanup can be no closer than 2.00 inches to supporting structure, and no more than 5 percent of skin area.)	Clean up and patch repair (TM 55-1500-204-25/1).
	Cracks or tears: no longer than 25 percent of shortest skin dimension	Clean up and patch repair (TM 55-1500-204-25/1).
2. Skin or Sheet Metal Nicks or Scratches		
A	Less than 10 percent of material thickness	Clean up (para 1-5-36). (Area cannot exceed 4.00 square inches.)
B	Deeper than 10 percent but less than 25 percent of material thickness	Clean up (para 1-5-36). (Area cannot exceed five percent of skin area and can be no closer than 2.00 inches to supporting structure.)
C	Exceeds B	Replace.
3. Skin Dents		
A	Smooth dents less than 0.25-inch deep	Repair (TM 55-1500-204-25/1).
B	Dents with nicks or gouges or deeper than 0.25-inch	Patch repair (TM 55-1500-204-25/1). (Treat dents as holes.)
C	Dents greater than 3.00 inches in diameter or cleanup will exceed 5 percent of skin area or will be closer than two inches to supporting structure	

GO TO NEXT PAGE

2-3-2. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR (cont) 2-3-2

Category	Limits	Action
4. Aluminum Honeycomb Panel Cracks, Tears, or Punctures		
B	Less than **6.00-inch** diameter in either direction after repair and cleanup	Repair (TM 55-1500-204-25/1).
C	Exceeds B or repair will hinder normal operation or function	Replace.
5. Pitted or Scratched Transparent Panel Surface		
A	Pits: Less than **0.010-inch** deep and less than **0.25-inch** in area	Repair (TM 55-1500-204-25/1).
	Scratches: less than **0.010-inch** deep and less than **5.00-inch** long	Repair (TM 55-1500-204-25/1).
B	Exceeds A	Repair (TM 55-1500-204-25/1).
C	Hinder or restrict flight crew vision	Replace.
6. Transparent Panel Cracks		
B	Less than **1.00-inch** long within **2.00 inches** of panel edge and/or propagating from attachment bolt holes	Replace.
C	Exceed B or propagate beyond stop drilled hole	Replace.
7. Cover and Door Cracks, Tears, and Punctures		
B	Less than 25 percent length of shortest dimension	Repair (TM 55-1500-204-25/1).
C	Exceeds B	Replace.
8. Main Landing Gear Cross Tube Scratches or Nicks		
B	Less than **0.75-inch** in diameter and no deeper than **0.215-inch** after cleanup	Repair (TM 55-1500-204-25/1).
C	Exceeds B	Replace.

GO TO NEXT PAGE

2-3-2. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR (cont) 2-3-2

Category	Limits	Action
9. Kevlar/Epoxy Skin Cracks, Tears, or Punctures		
B	Cracks or tears: less than 25 percent length of shortest skin dimension	Repair (para 2-7-1).
	Punctures: less than 2.00 inches from supporting structure	Repair (para 2-7-1).
C	Exceeds B or hinders normal operation or function	Replace.
10. Kevlar/Epoxy Skin or Honeycomb Delamination		
B	No deeper than three plies or 0.050-inch, whichever is less. (Treat limit-exceeding damages as crack, tear, or puncture repair.)	Repair (para 2-7-1).
11. Kevlar/Epoxy Skin or Honeycomb Debonding		
C	Greater than 6.00 inches but less than 40 percent of panel area	Replace if possibility of danger to crew or helicopter exists.
	Greater than 40 percent of panel area	Replace panel.
12. Kevlar/Epoxy Fairings Debonding		
B		Rebond where ribs, gussets, baffles, stiffeners, seals, and doublers have debonded.
13. Kevlar/Epoxy Bond Honeycomb Panels Cracks, Tears, or Punctures		
B	Cracks or tears: less than 6.00 inches long. (Damage to core must not exceed 6.00 inches in any direction after trimming and cleanup.)	Repair (para 2-7-1).
C	Exceeds B (cracks, tears, or punctures)	Replace item.

GO TO NEXT PAGE

2-3-2. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR (cont) 2-3-2

Category	Limits	Action
14. Kevlar/Epoxy Fairings Cracks		
B	No longer than 25 percent of shortest skin dimension.	Repair (para 2-7-1).
C	Exceeds B or extends from one end of part through other end.	Replace.
15. Kevlar/Epoxy Fairings Erosion		
B	Any broken resin or exposed fibers.	Repair (para 2-7-1).
16. Boron Carbide Cracks (e.g., nontransparent barrier)		
C	Any cracking.	Replace.
17. Area Weapon Support Structure (FS 91.7)		
A	Single crack less than 0.75 inch.	Repair (TM 55-1500-204-25/1).
B	Total of all cracks on one side of bulkhead - less than 1.75 inches.	Repair (TM 55-1500-204-25/1).
	Total of all cracks on bulkhead - less than 1.75 inches.	Repair (TM 55-1500-204-25/1).
	Single crack greater than 0.75 inch.	Ground helicopter until repaired.
	Total of all cracks on one side of bulkhead - greater than 1.75 inches.	Ground helicopter until repaired.
	Total of all cracks on bulkhead - greater than 1.75 inches.	Ground helicopter until repaired.

GO TO NEXT PAGE

2-3-2. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR (cont) 2-3-2

Category	Limits	Action
18. Fuselage Frame Assembly (F.S.547.15)		
	Includes attached stringers within six inches of attachment to this frame.	
A	Single crack less than 1.5 inch.	Continue operation of helicopter - INSPECT DAILY.
B	Any crack greater than A	Contact MDHC Technical Representative for repair.
	Any crack within 0.25 inch of thin-to-thick wall transition flange.	
C	Greater than B	Replace.
19. Mast Support Base Nicks or Scratches		
A	Not Applicable	
B	Maximum depth 0.100 inch	Must be blended out.
C	Exceeds B	Replace.
20. Mast Upper Support Base Support Struts Nicks or Scratches		
A	Not Applicable	
B	Maximum depth 0.005 inch (2 allowed per strut)	Must be blended out. Dye penetrant inspect all blended areas.
C	Radial scratches on cylindrical section or exceeds B.	Replace.

GO TO NEXT PAGE

2-3-2. CLASSIFICATION OF FUSELAGE DAMAGE AND TYPES OF REPAIR (cont) 2-3-2

Category	Limits	Action
21. Mast Lower Support Base Support Struts Nicks or Scratches		
A	Not Applicable	
B	Maximum depth on clevis surface **0.010 inch** (2 allowed per strut). Maximum depth on lower attachment ear surface **0.040 inch.** Maximum depth at lower end of strut and edge of attachment ear **0.080 inch.**	Must be blended out. Dye penetrant inspect all blended areas.
C	Exceeds B	Replace.
22. Ammunition Magazine Strut Assembly Nicks or Scratches Upper and Lower Attachment Fittings/Tubular Section		
A	Not Applicable	
B	Maximum depth **0.010 inch**	Must be blended out.
C	Exceeds B	Replace.
23. Strut End Fittings Nicks or Scratches		
A	Not Applicable	
B	Maximum **0.005 inch**	Must be blended out.
C	Exceeds B	Replace.

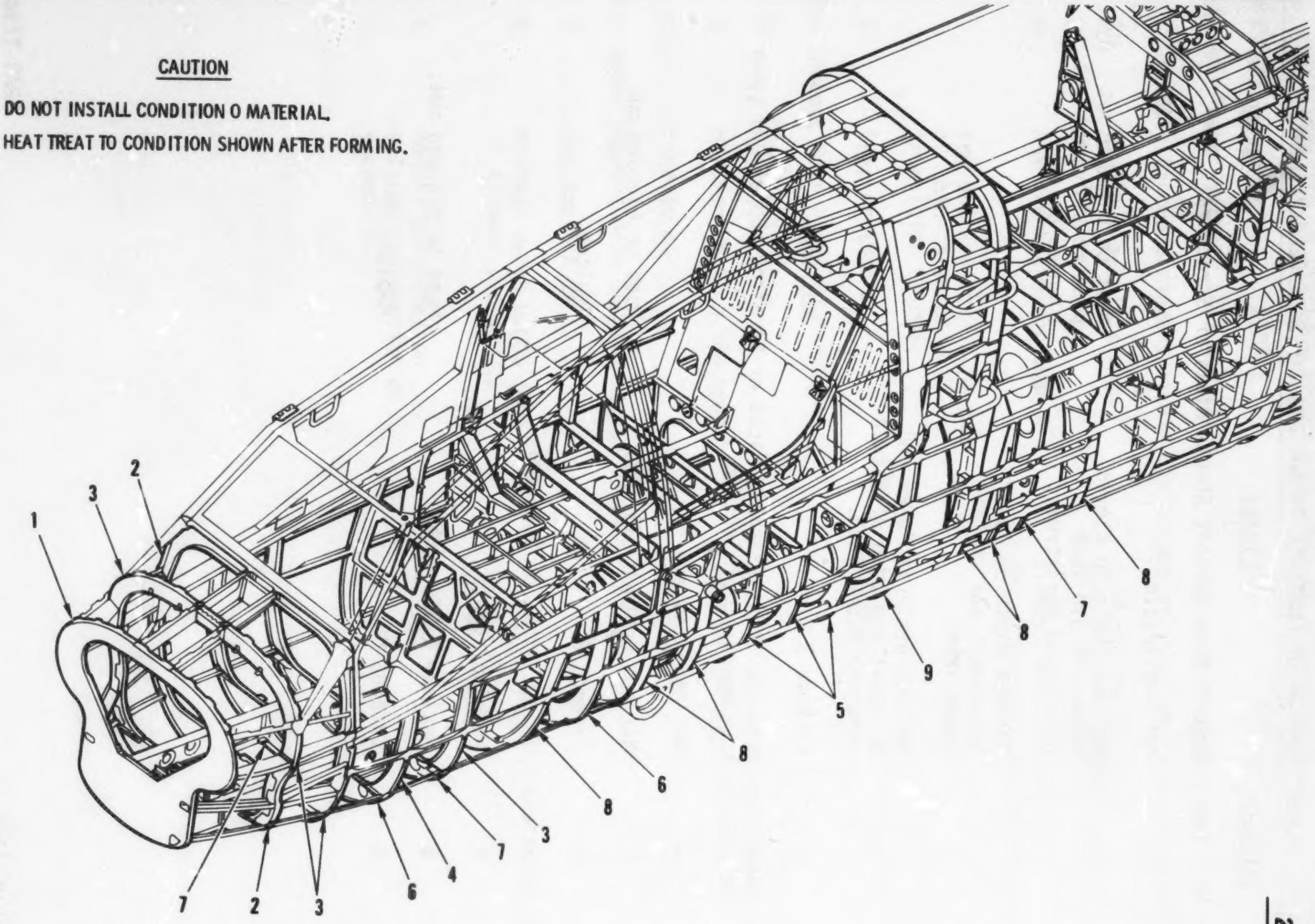
END OF TASK

2-3-3. FORWARD FUSELAGE FRAME STRUCTURE

CAUTION

DO NOT INSTALL CONDITION O MATERIAL.

HEAT TREAT TO CONDITION SHOWN AFTER FORMING.



2-3-3. FORWARD FUSELAGE FRAME STRUCTURE (cont)

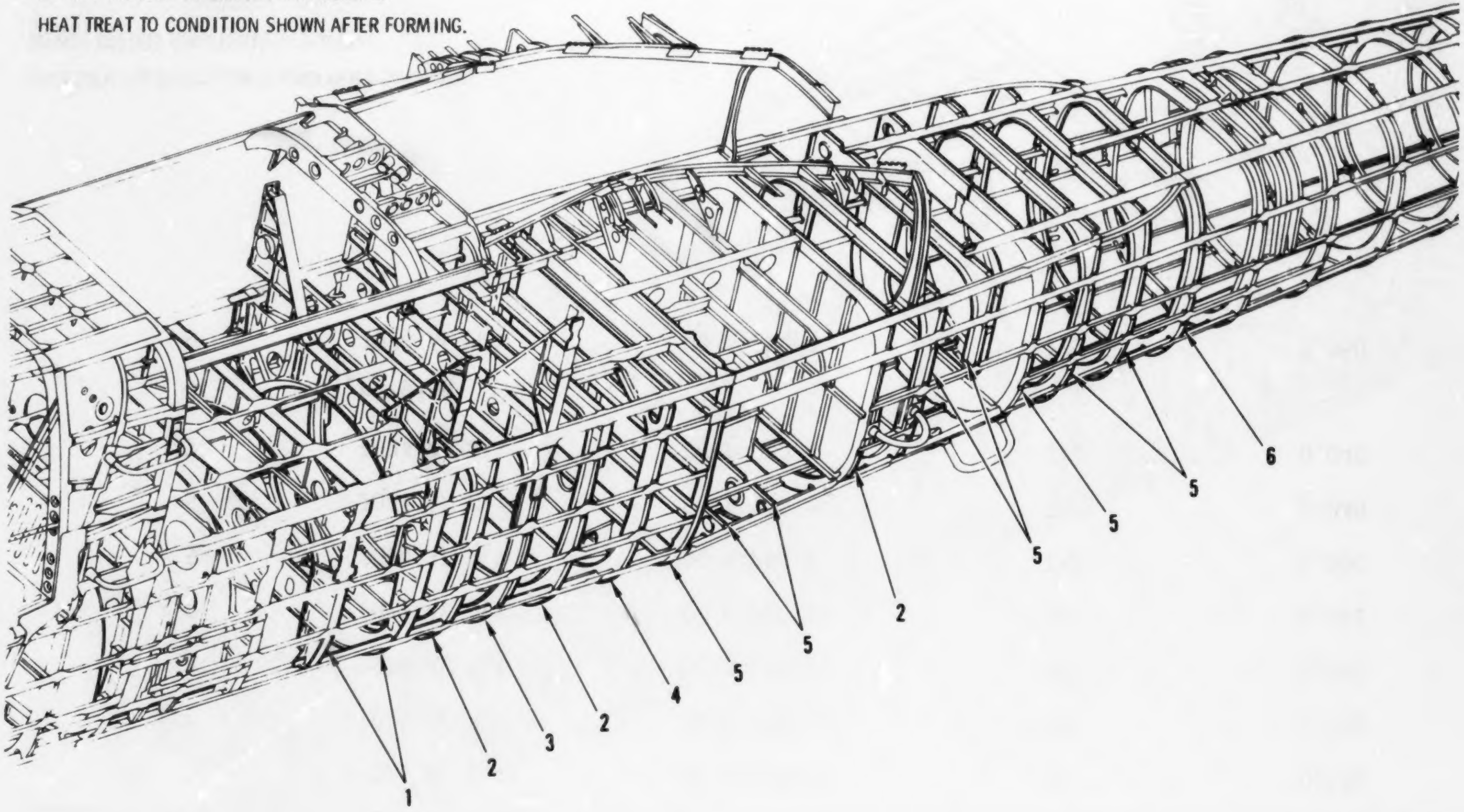
Item	Material	Specification	Condition	Thickness (inches)
1	7075 AL CLAD	QQ-A-250/13	T6	0.040
2	7075 AL ALY	QQ-A-250/12	T6	0.040
3	7075 AL ALY	QQ-A-250/12	T6	0.080
4	7075 AL ALY	QQ-A-250/12	T6	0.071
5	2024 AL ALY	QQ-A-250/4	T42	0.050
6	2024 AL ALY	QQ-A-250/4	T6	0.040
7	2024 AL ALY	QQ-A-250/4	T42	0.040
8	Forging			
9	2024 AL ALY	QQ-A-250/4	T62	0.050

2-3-4. CENTER FUSELAGE FRAME STRUCTURE

CAUTION

DO NOT INSTALL CONDITION O MATERIAL.

HEAT TREAT TO CONDITION SHOWN AFTER FORMING.



2-3-4. CENTER FUSELAGE FRAME STRUCTURE (cont)

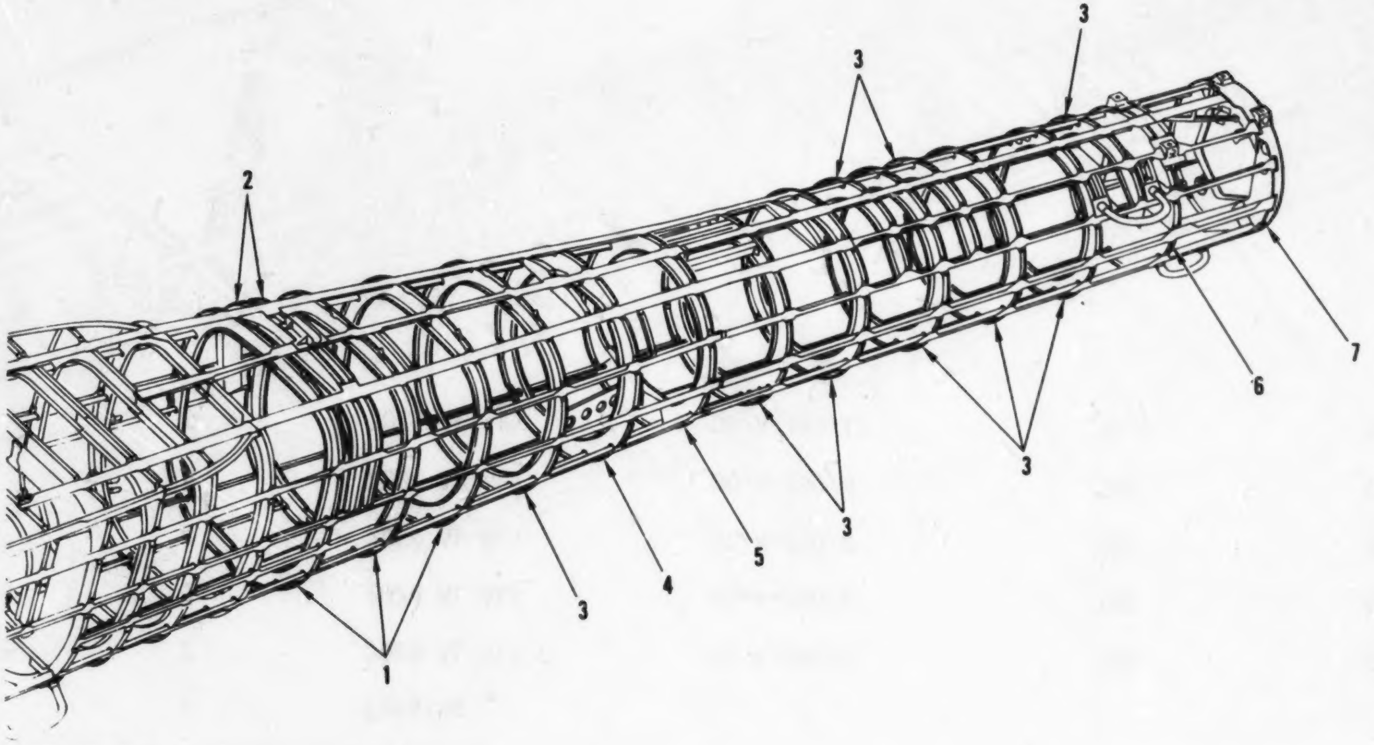
Item	Material	Specification	Condition	Thickness (inches)
1	Forging			
2	2024 AL ALY	QQ-A-250/4	T42	0.040
3	2024 AL ALY	QQ-A-250/4	T42	0.050
4	2024 AL ALY	QQ-A-250/4	T42	0.071
5	2024 AL ALY	QQ-A-250/4	T42	0.032
6	7075 AL ALY	QQ-A-250/12	T6	0.071

2-3-5. AFT FUSELAGE FRAME STRUCTURE

CAUTION

DO NOT INSTALL CONDITION O MATERIAL

HEAT TREAT TO CONDITION SHOWN AFTER FORMING.

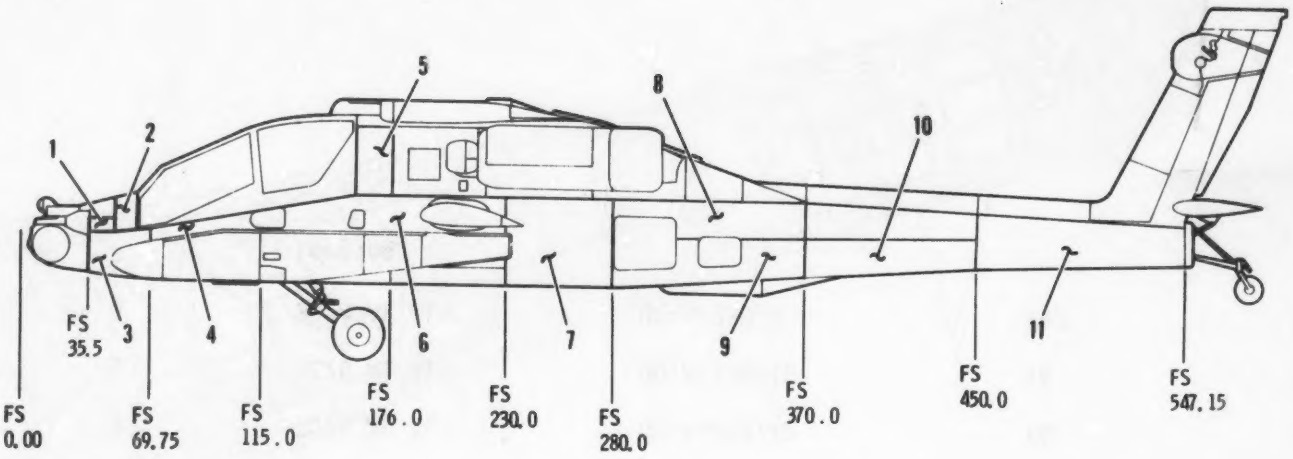


MM04-0009A

2-3-5. AFT FUSELAGE FRAME STRUCTURE (cont)

Item	Material	Specification	Condition	Thickness (inches)
1	2024 AL ALY	QQ-A-250/4	T42	0.032
2	2024 AL ALY	QQ-A-250/4	T42	0.040
3	7075 AL ALY	QQ-A-250/12	T6	0.040
4	7075 AL ALY	QQ-A-250/12	T6	0.050
5	7075 AL ALY	QQ-A-250/12	T6	0.100
6	2024 AL ALY	QQ-A-250/4	T42	0.071
7	Forging			

2-3-6. FUSELAGE SIDE SKIN PLATES

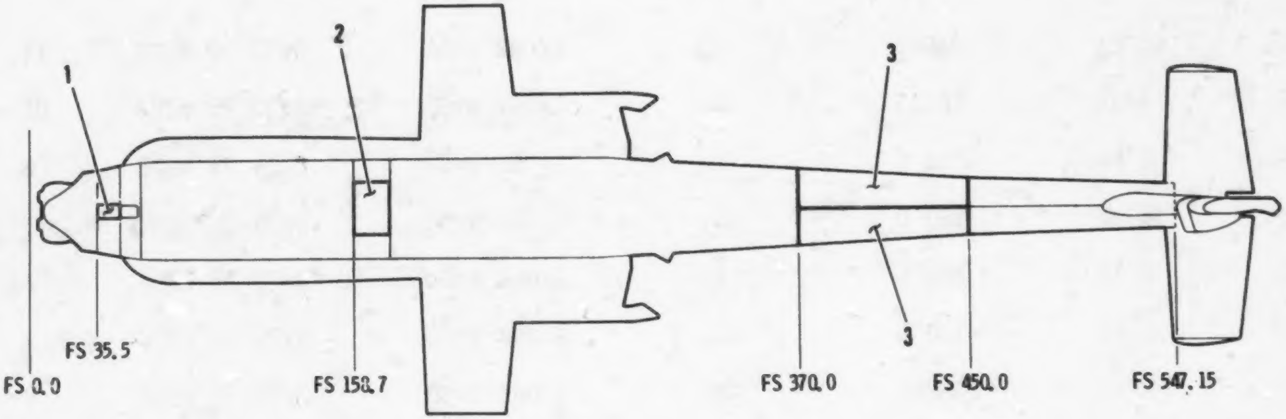


MM04-0012A

2-3-6. FUSELAGE SIDE SKIN PLATES (cont) 2-3-6

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T42	0.032	8.5	14.0
2	2024 AL CLAD	QQ-A-250/5	T42	0.032	11.0	80.0
3	2024 AL CLAD	QQ-A-250/5	T42	0.032	36.0	43.0
4	2024 AL CLAD	QQ-A-250/13	T6	0.050	48.0	50.0
5	2024 AL CLAD	QQ-A-250/5	T42	0.040	18.5	40.5
6	2024 AL CLAD	QQ-A-250/5	T3	0.071	59.0	116.0
7	2024 AL CLAD	QQ-A-250/5	T3	0.032	51.0	59.0
8	2024 AL CLAD	QQ-A-250/5	T42	0.032	33.5	91.0
9	2024 AL CLAD	QQ-A-250/5	T3	0.032	44.0	91.0
10	2024 AL CLAD	QQ-A-250/5	T3	0.032	27.0	34.5
11	2024 AL CLAD	QQ-A-250/5	T3	0.040	43.0	100.0

2-3-7. FUSELAGE TOP SKIN PLATES



MM04-0013A

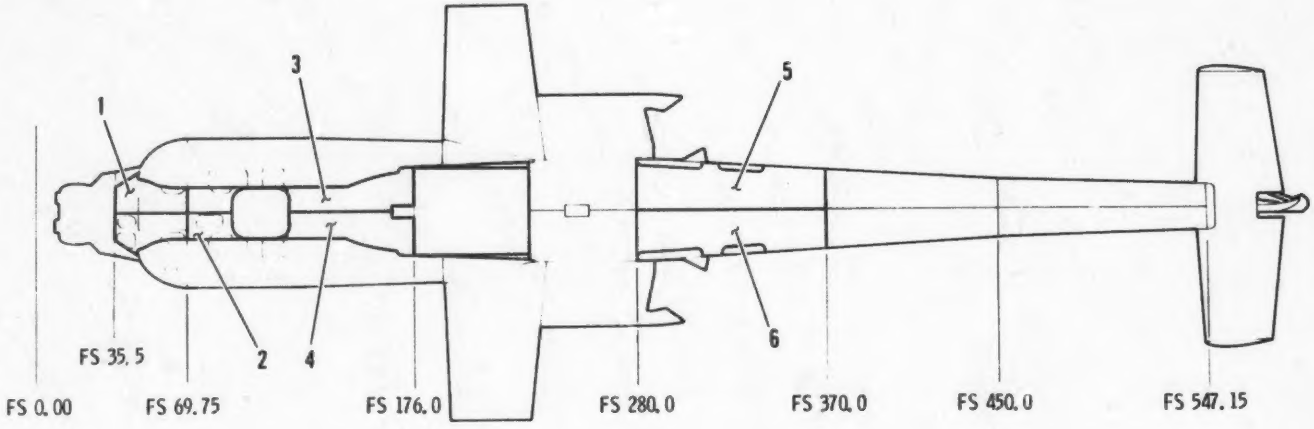
2-3-7. FUSELAGE TOP SKIN PLATES (cont)

2-3-7

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T3	0.032	8.0	12.3
2	2024 AL CLAD	QQ-A-250/5	T3	0.032	17.4	22.1
3	2024 AL CLAD	QQ-A-250/5	T3	0.032	18.0	34.5

2-3-8. FUSELAGE BOTTOM SKIN PLATES

2-3-8



MM04-0014A

2-3-8

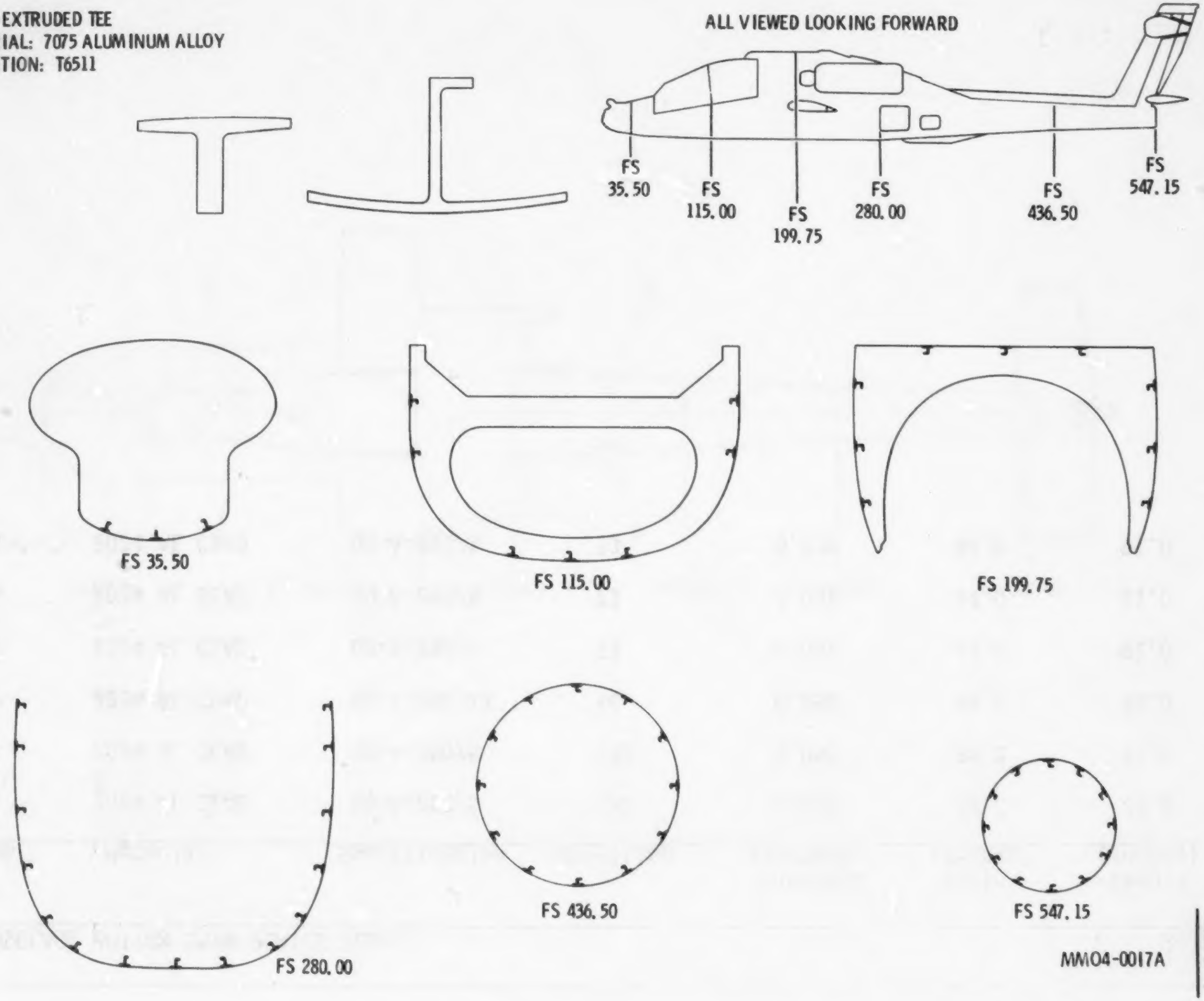
2-3-8. FUSELAGE BOTTOM SKIN PLATES (cont)

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T42	0.032	36.0	43.0
2	2024 AL CLAD	QQ-A-250/5	T42	0.050	36.0	43.0
3	2024 AL CLAD	QQ-A-250/13	T6	0.050	48.0	50.0
4	2024 AL CLAD	QQ-A-250/5	T3	0.032	44.0	91.0
5	2024 AL CLAD	QQ-A-250/5	T3	0.032	44.0	91.0
6	2024 AL CLAD	QQ-A-250/5	T3	0.032	44.0	91.0

2-3-9. FUSELAGE STRINGERS

TYPE: EXTRUDED TEE
MATERIAL: 7075 ALUMINUM ALLOY
CONDITION: T6511

ALL VIEWED LOOKING FORWARD



MM04-0017A

2-3-10. CATWALK REMOVAL/INSTALLATION 2-3-10

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

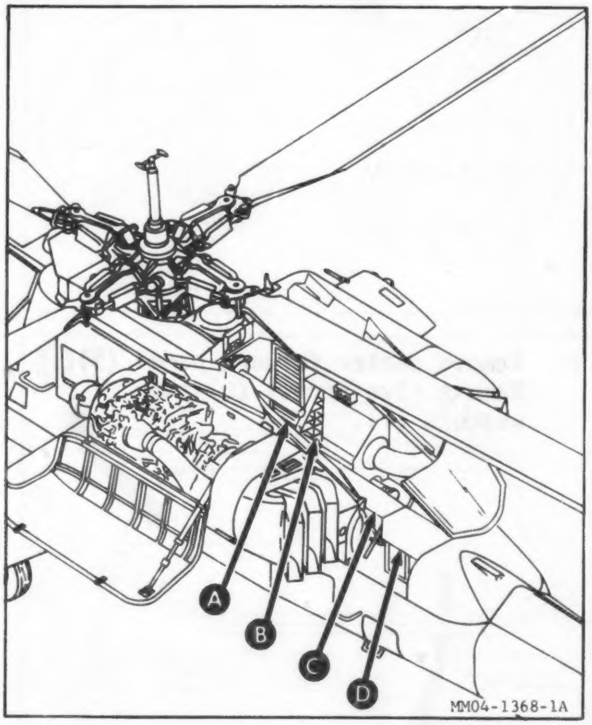
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer

Equipment Conditions:

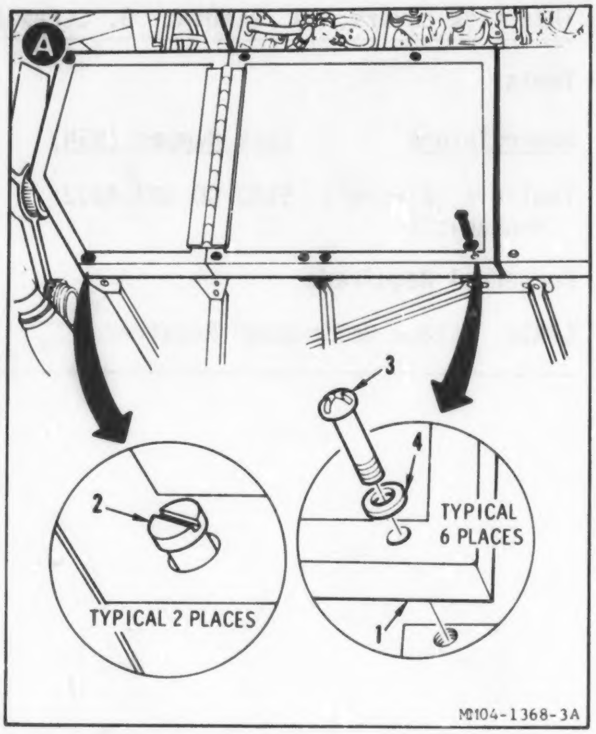
Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors T250L, T250R, T290L, T290R, and L325 opened
15-2-2	APU upper cover removed



GO TO NEXT PAGE

2-3-10. CATWALK REMOVAL/INSTALLATION (cont) 2-3-10

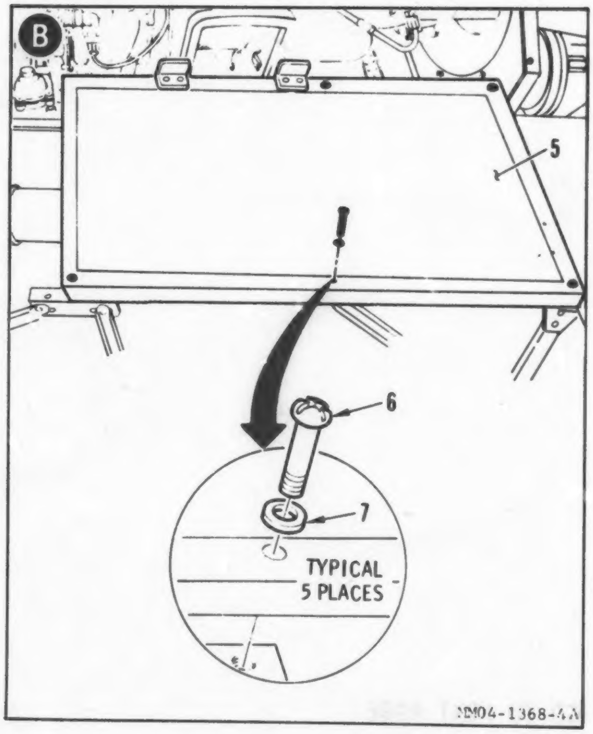
A. REMOVAL



1. Remove forward panel (1).

   a. Remove two fasteners (2).

   b. Remove six screws (3) and washers (4).



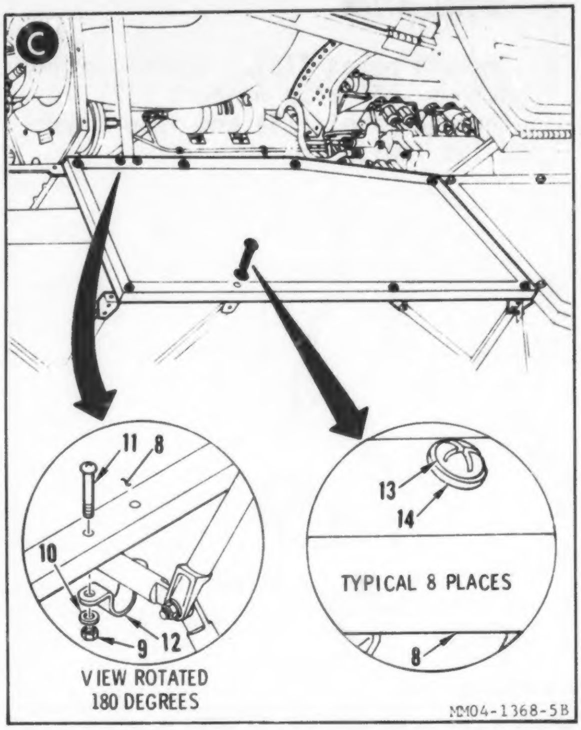
2. Remove center forward panel (5). Remove five screws (6) and washers (7).

GO TO NEXT PAGE

3. **Remove center aft panel (8).**

   a. Remove two nuts (9), two washers (10), two screws (11), and U-clamp (12).

   b. Remove eight screws (13) and washers (14).



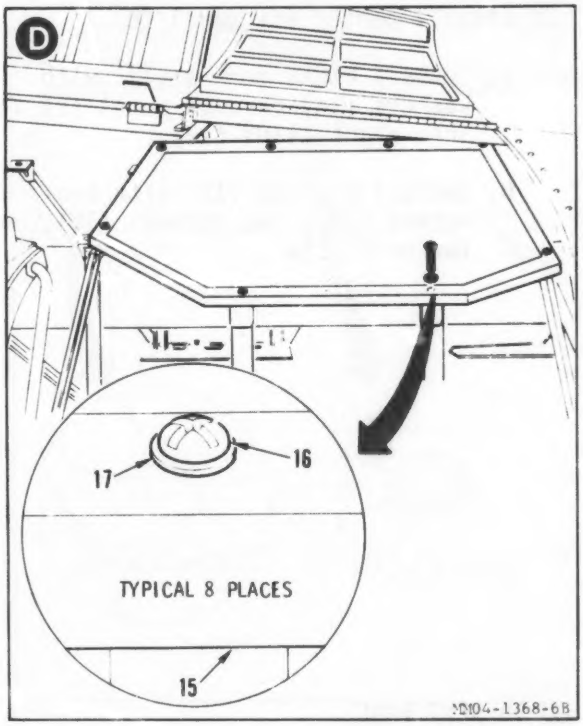
4. **Remove aft panel (15).** Remove eight screws (16) and washers (17).

B. CLEANING

Wipe all removed parts with a clean dry rag.

C. INSPECTION

Check all attaching areas of panels for excessive wear (para 2-3-2).

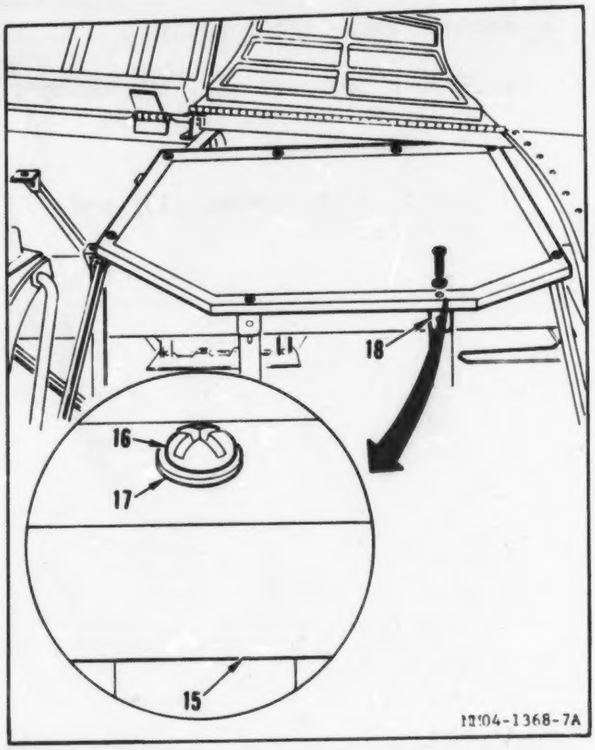


GO TO NEXT PAGE

2-3-10. CATWALK REMOVAL/INSTALLATION (cont) 2-3-10

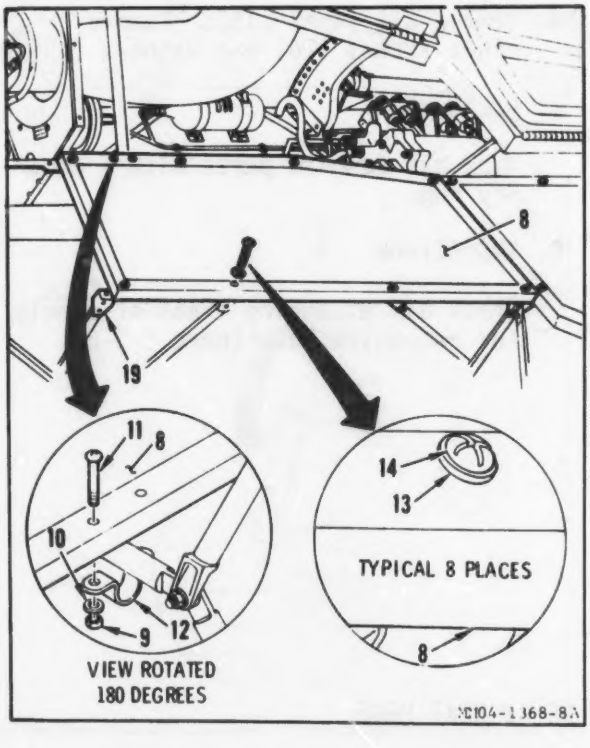
D. INSTALLATION

1. Install panel (15). Install eight screws (16) with washers (17) through panel (15) and into eight clips (18).



M104-1368-7A

2. Install center aft panel (8).
   a. Install eight screws (13) with washers (14) through panel (8) and into eight clips (19).
   b. Install U-clamp (12) with two screws (11), two washers (10), and two nuts (9).

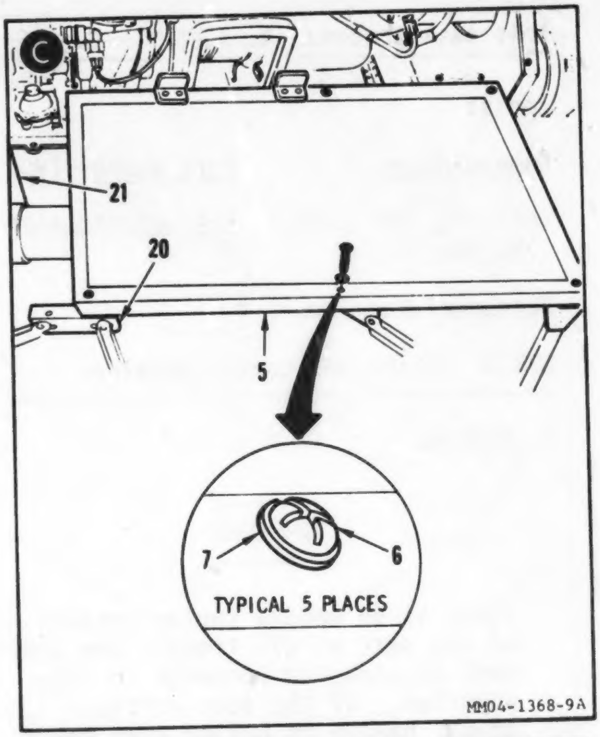


M104-1368-8A

GO TO NEXT PAGE

2-3-10. CATWALK REMOVAL/INSTALLATION (cont) 2-3-10

3. **Install panel (5).** Install five screws (6) with washers (7) through panel (5) and into three clips (20) and auxiliary power unit (APU) lower cover (21).



MM04-1368-9A

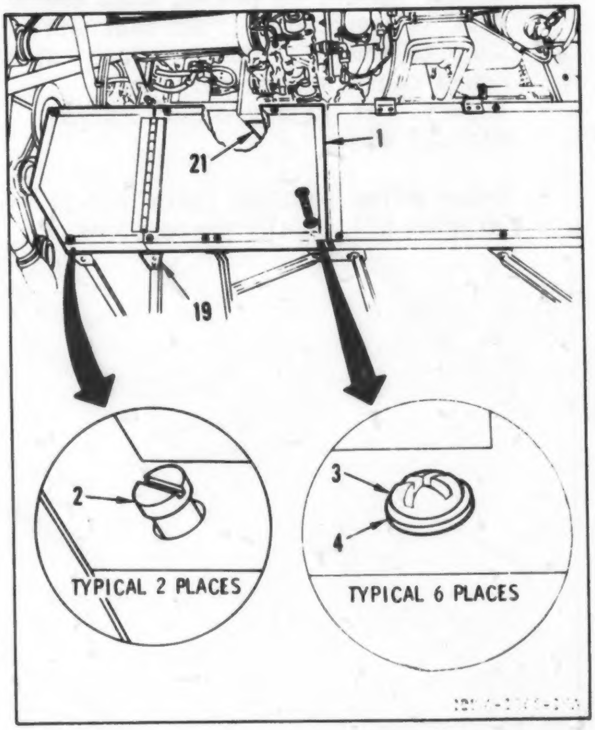
4. **Install forward panel (1).**

   a. Install six screws (3) with washers (4) through panel (1) and into three clips (19) and APU lower cover (21).

   b. Lock two fasteners (2) at forward end of panel (1).

5. **Install APU upper cover** (para 15-2-3).

6. **Secure access panels T250L, T250R, T290L, T290R, and L325** (para 2-2-2).



END OF TASK

2-3-11. PASS-THRU TRAY REPLACEMENT 2-3-11

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

Personnel Required:

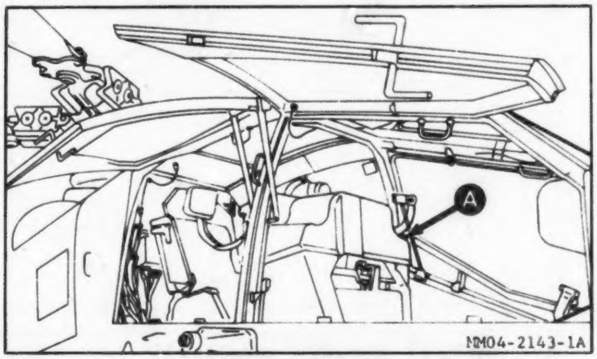
67R10 Attack Helicopter Repairer

A. REMOVAL

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full up-position. This could cause severe personnel injury. If injury occurs, seek medical aid.

1. Enter pilot station (para 1-7-1). Observe all safety precautions.



GO TO NEXT PAGE

2-3-11. PASS-THRU TRAY REPLACEMENT (cont) 2-3-11

2. Remove pass-thru tray (1).

a. Remove two screws (2) and two washers (3).

b. Remove three screws (4) and three washers (5).

c. Remove tray (1) from nontransparent barrier (6).

B. CLEANING

Wipe attaching areas of pass-thru tray with a clean rag.

C. INSPECTION

Check attaching areas of pass-thru tray for excessive wear (para 2-3-2).

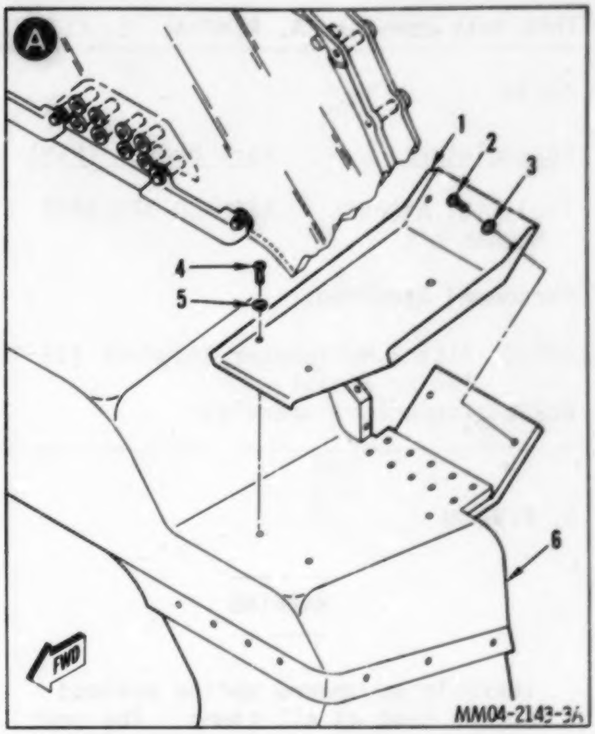
D. INSTALLATION

Install tray (1) on barrier (6).

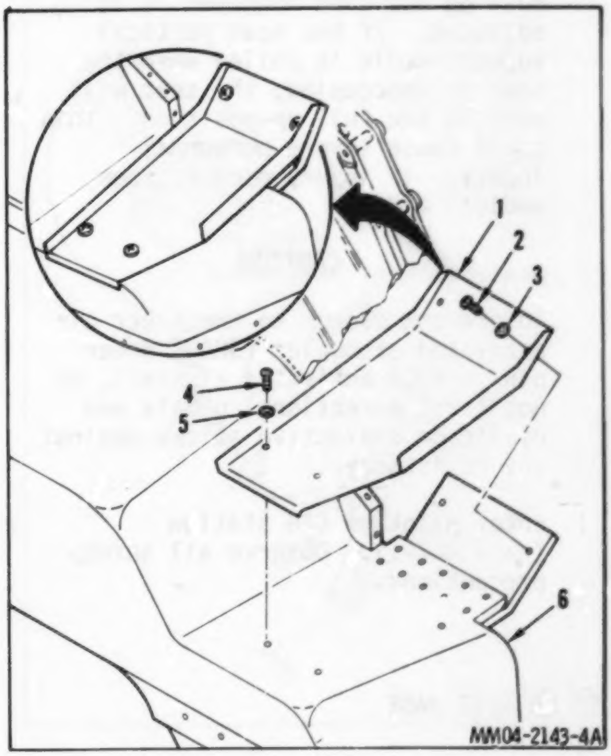
a. Aline tray (1) with five attachment points on barrier (6).

b. Install three washers (5) and three screws (4).

c. Install two washers (3) and two screws (2).



MM04-2143-3A



MM04-2143-4A

END OF TASK

2-3-12. PILOT/CPG SEAT REMOVAL/INSTALLATION 2-3-12

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aicraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10	Attack Helicopter Repairer (3) Two to assist
66R30	Inspector/Supervisor

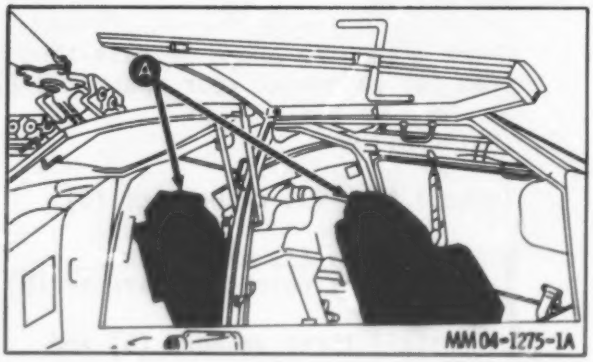
References:

TM 9-1270-221-23

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
TM 9-1270-221-23	HDU removed

A. REMOVAL



WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full up-position. This could cause severe personnel injury. If injury occurs, seek medical aid.

CAUTION

To prevent damage to the shear pin activated decoupler (SPAD) shear pin in BUCS activated aircraft, do not force directional pedals and cyclic or collective sticks against any resistance.

1. Enter pilot or CPG station (para 1-7-1). Observe all safety precautions.

GO TO NEXT PAGE

2-3-12. PILOT/CPG SEAT REMOVAL/INSTALLATION (cont) 2-3-12

CAUTION

The seat must be guided out of its station at the proper angle. Damage to canopy can occur if seat removal is not properly directed.

2. **Remove seat (1) from station.**

   a. Pull handle (2) to move seat (1) to full-up position.

   b. Set PWR No. 2 handle on Pilot/CPG power quadrant to LOCKOUT.

   c. Remove two upper quick-release pins (3).

   d. Tilt seat (1) forward and hold.

   e. Stop here if only tilting the seat is required.

   f. Remove quick release pins (4).

   g. Remove wire harness/bracket (5) from bracket (6).

   h. Remove two lower quick-release pins (7).

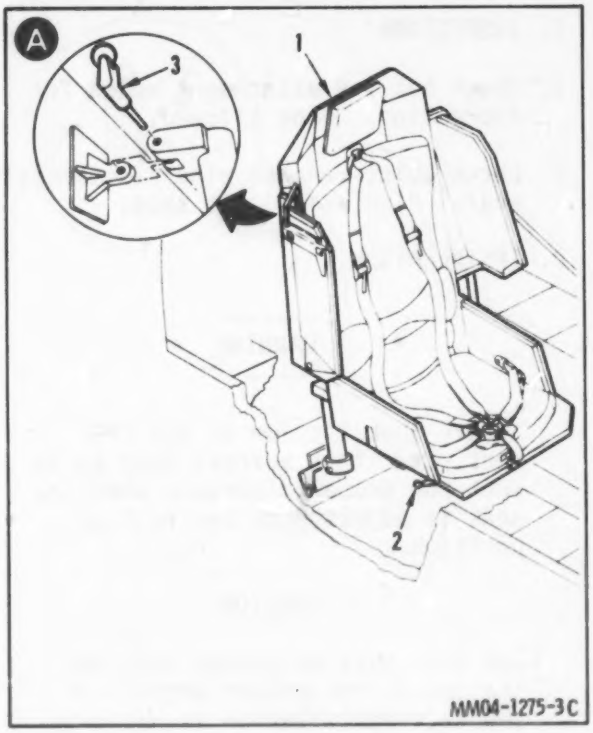
NOTE

One person directs angle of seat during removal.

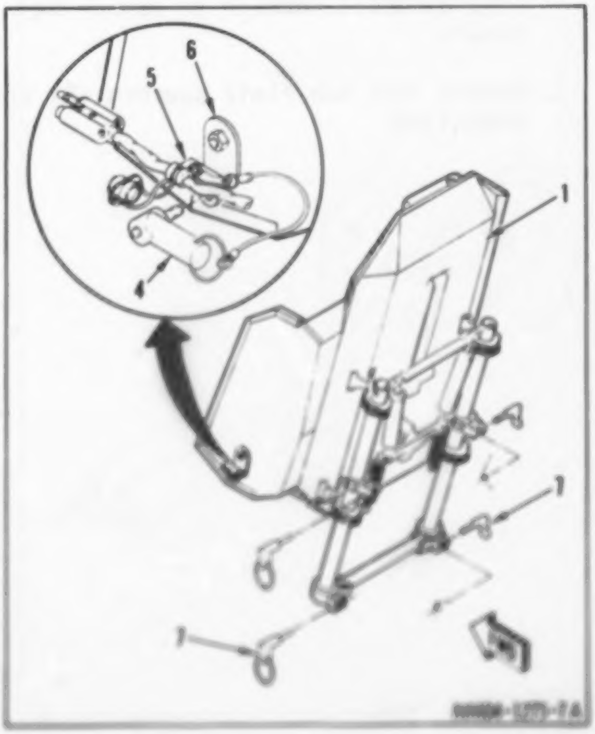
   i. Remove seat (1).

B. CLEANING

Wipe all removed and attaching parts with a clean dry rag.



MM04-1275-3C



MM04-1275-7A

GO TO NEXT PAGE

C. INSPECTION

1. Check bearing attachment holes for elongation. None allowed.

2. Check quick-release pins for excessive wear. Pins should fit snug.

D. INSTALLATION

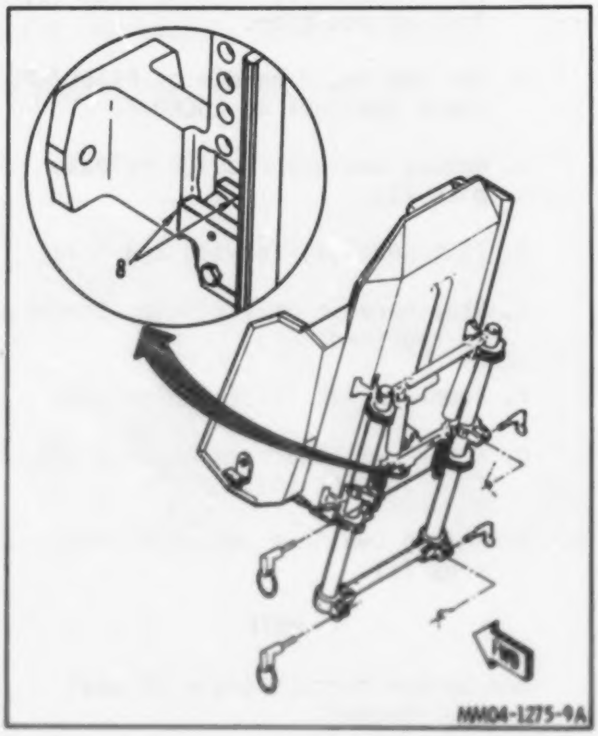
WARNING

Before installation of the CPG seat, two limit spacers must be in seat for proper clearance when the seat is adjusted to the full up position.

CAUTION

The seat must be guided into the station at the proper angle. If the seat installation is not properly directed, damage to canopy may occur.

1. Ensure that two limit spacers (8) are installed.



MM04-1275-9A

GO TO NEXT PAGE

2-3-12. PILOT/CPG SEAT REMOVAL/INSTALLATION (cont) 2-3-12

2. Install seat (1) in station.

NOTE

One person directs angle of seat during installation.

a. Position seat (1) in station.

b. Tilt seat (1) forward and hold in place.

c. Install two lower quick-release pins (7).

NOTE

Ensure wire harness from clamp to connector is 5 INCHES long.

d. Install wire harness/bracket assembly (5) in bracket (6).

e. Install quick-release pin (4).

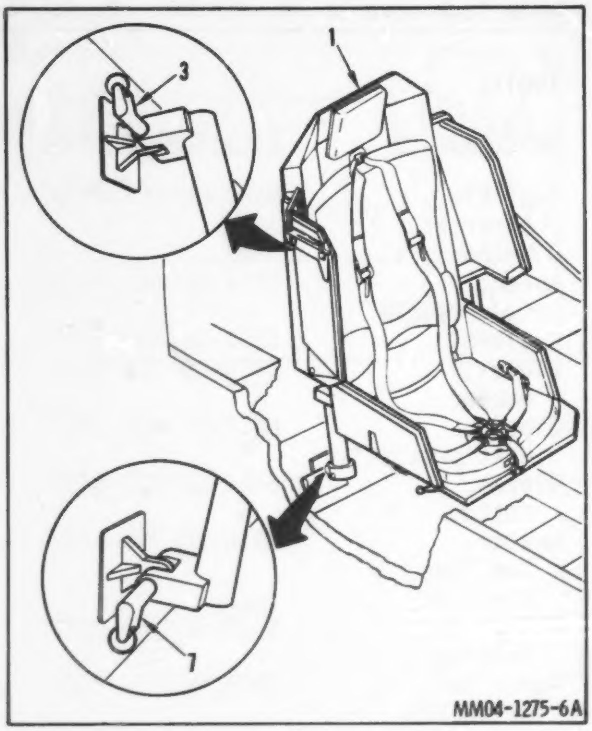
f. Tilt seat (1) back and hold in place.

g. Install two upper quick-release pins (3).

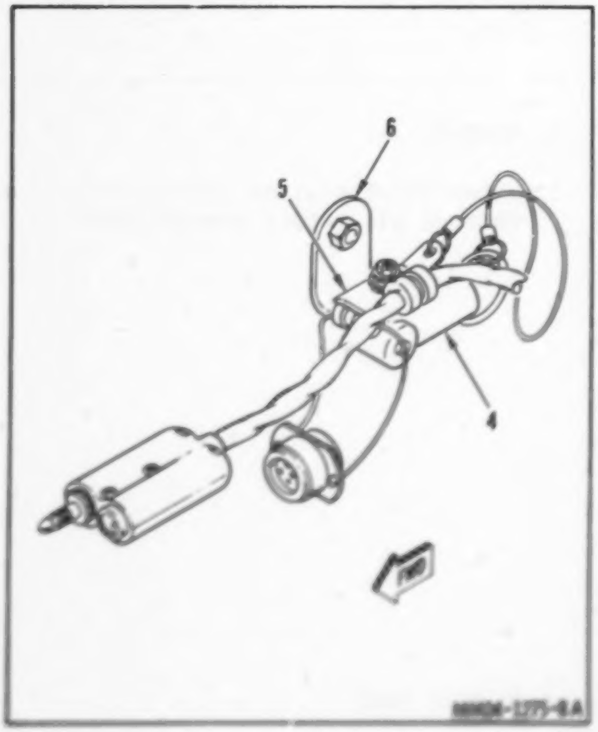
3. Check seat (1) for proper operation.

4. Install helmet display unit (HDU) (TM 9-1270-221-23).

5. Inspect (TI).



MM04-1275-6A



MM04-1275-6A

END OF TASK

2-3-13. PILOT CANTED BULKHEAD BEARING REPLACEMENT 2-3-13

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-003-4692
Apron, Impermeable	8415-00-082-6108
C-Clamp	5120-00-180-0907
Gloves, Rubber	8415-00-266-8677
Gloves, Heat-protective	8415-01-092-3910
Gloves, Cotton	8414-00-268-8330
Heater, Gun Type, Electric	4940-00-785-1162
Puller Kit, Bearing	5120-00-355-6220
Punch Set, Drive Pin	5120-00-883-3003
Respirator, Air Filter	4240-00-022-2524

Materials/Parts:

(E11)	Primer, Sealant
(E39)	Trichloroethane
(E46)	Compound, Sealing
(E59)	Compound, Sealing
(E62)	Tape, Pressure-Sensitive
(E72)	Cellophane
(E82)	Primer, Coating

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

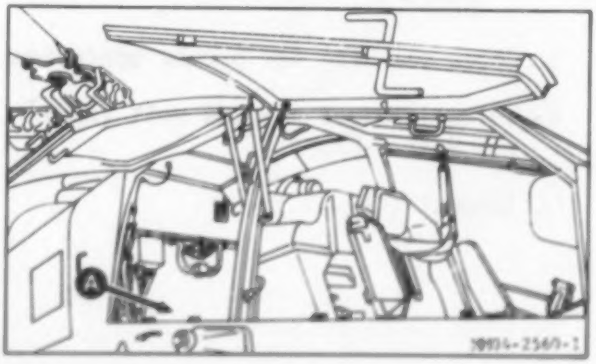
TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-12	Pilot seat removed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.



GO TO NEXT PAGE

2-3-13. PILOT CANTED BULKHEAD BEARING REPLACEMENT (cont) 2-3-13

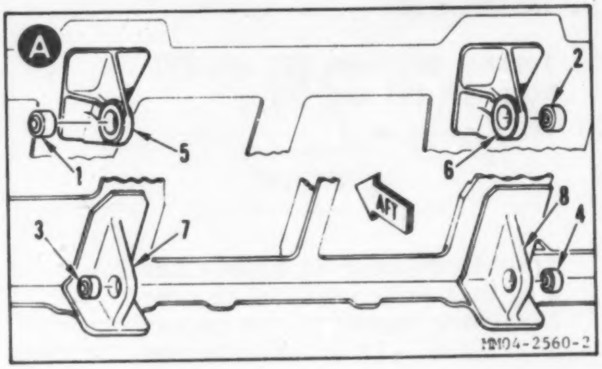
2. Remove bearings (1), (2), (3), and (4) from housings (5), (6), (7), and (8) (TM 55-1500-204-25/1).

B. CLEANING

Wipe housings with a clean rag.

C. INSPECTION

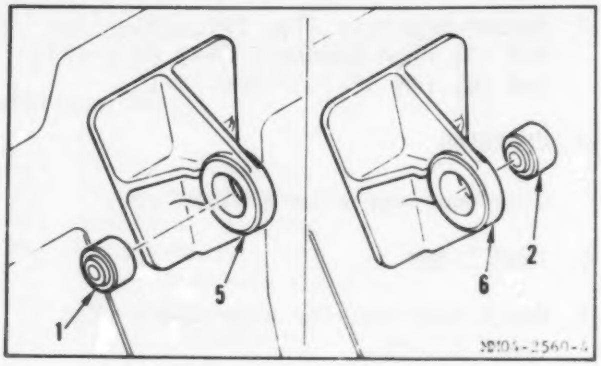
1. Check housings for wear and cracks (para 2-3-1).
2. Check housings for corrosion (para 1-5-38).



GO TO NEXT PAGE

2-3-13. PILOT CANTED BULKHEAD BEARING REPLACEMENT (cont) 2-3-13

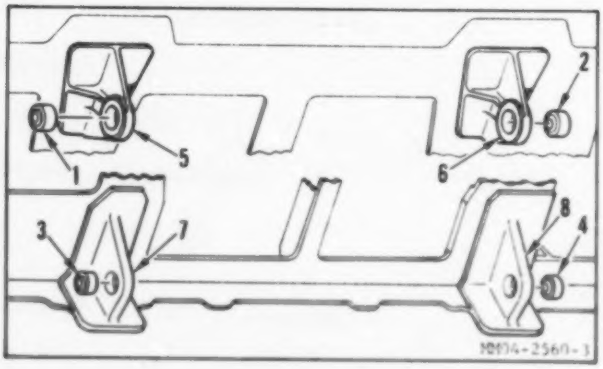
D. INSTALLATION



1. Install bearings (1) and (2) in housings (5) and (6).

WARNING

Trichloroethane is highly toxic. Use in a well ventilated area. Breathing vapors could cause dizziness. If trichloroethane comes in contact with eyes or skin, flush with water. If trichloroethane comes in contact with eyes or dizziness occurs, seek medical aid.



a. Wipe mating surfaces of bearings (1), (2), (3), and (4) and housings (5), (6), (7), and (8) with a rag dampened in trichloroethane (E39). Do not allow trichloroethane to enter space between inner and outer races of bearings (1), (2), (3), and (4). Wear respirator, rubber gloves, and impermeable apron while cleaning parts. Wear cotton gloves while handling cleaned bearings.

b. Apply primer (E11) to mating surfaces of bearings (1) and (2) and housings (5) and (6). Do not allow primer to enter space between inner and outer bearing races. Let primer air dry for 30 MINUTES.

GO TO NEXT PAGE

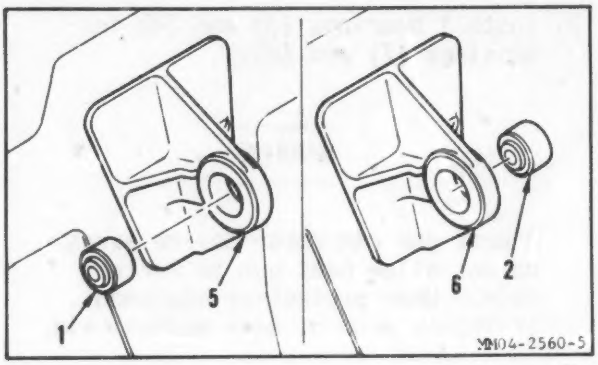
2-3-13. PILOT CANTED BULKHEAD BEARING REPLACEMENT (cont) 2-3-13

c. Apply a coat of sealing compound (E46) to mating surfaces of bearings (1) and (2) and housings (5) and (6). Do not allow locking compound to enter space between inner and outer bearing races.

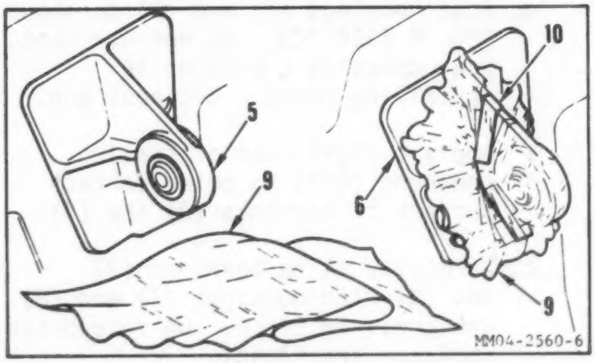
d. Hand install bearings (1) and (2) into housings (5) and (6). Be sure outer surfaces are flush.

e. Form excess sealing compound (E46) into a neat fillet around outer races of bearings (1) and (2). Do not allow locking compound to enter space between inner and outer bearing races.

f. Cover bearing housings (5) and (6) with cellophane (E72) (9) and seal with tape (E62) (10). Allow to cure **24 HOURS** before removing tape (10) and cellophane (9).



MM04-2560-5



MM04-2560-6

GO TO NEXT PAGE

2-3-13. PILOT CANTED BULKHEAD BEARING REPLACEMENT (cont) 2-3-13

2. Install bearings (3) and (4) in housings (7) and (8).

WARNING

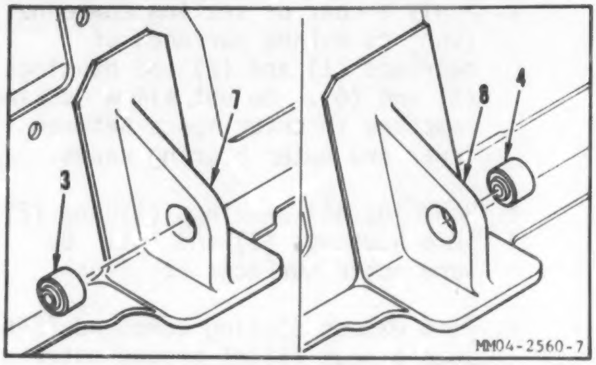
A heat gun can cause severe burns. Do not allow heat gun to contact skin. Wear protective equipment. If injury occurs, seek medical aid.

a. Heat housings (7) and (8) to about 240 °F (116 °C). Do not overheat. Wear asbestos gloves while installing parts. Use heat gun.

b. Apply a light coat of sealing compound (E59) to outer contact surface of bearings (3) and (4).

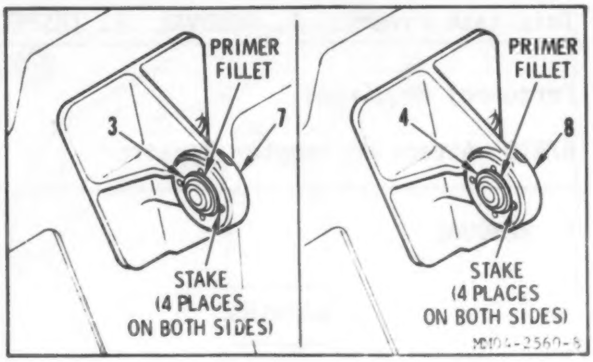
c. Carefully aline bearings (3) and (4) with housings (7) and (8) and press in place. Be sure outer surfaces are flush.

d. Wipe off excess sealing compound (E59) and allow housings (7) and (8) to return to ambient temperature.



GO TO NEXT PAGE

2-3-13. PILOT CANTED BULKHEAD BEARING REPLACEMENT (cont) 2-3-13


PRIMER FILLET
3
7
STAKE (4 PLACES ON BOTH SIDES)
PRIMER FILLET
4
8
STAKE (4 PLACES ON BOTH SIDES)
MD104-2560-5

e. Apply a fillet of primer (E82) between bearing (3) outer race and housing (7). Apply a fillet of primer (E82) between bearing (4) outer race and housing (8). Do not allow primer to enter space between inner and outer races of bearings (3) and (4).

f. Stake housing (7) over outer race of bearing (3). Stake housing (8) over outer race of bearing (4). Stake at four equally spaced points around bearings (3) and (4) on both sides of housings (7) and (8). Use punch.

g. Check that dried primer (E82) does not interfere with rotation of bearings (3) and (4).

h. Check for smooth fillets of primer (E82).

i. Use finger pressure to check that bearings (3) and (4) do not move sideways in housings (7) and (8).

3. Inspect (TI).

4. Install pilot seat (para 2-3-12).

END OF TASK

2-3-14. PILOT/CPG SEAT CUSHION REPLACEMENT 2-3-14

This task covers: A. REMOVAL B. INSPECTION C. INSTALLATION

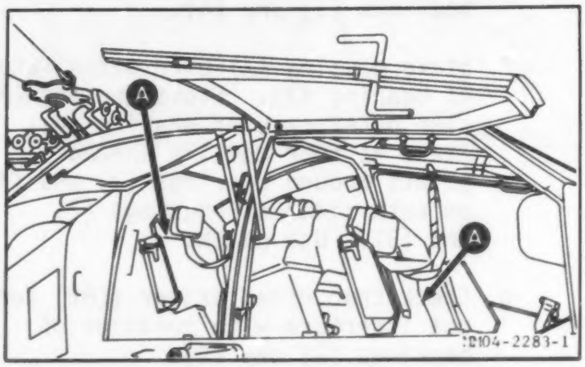
Personnel Required:	References:
67R10 Attack Helicopter Repairer	TM 55-1500-204-25/1

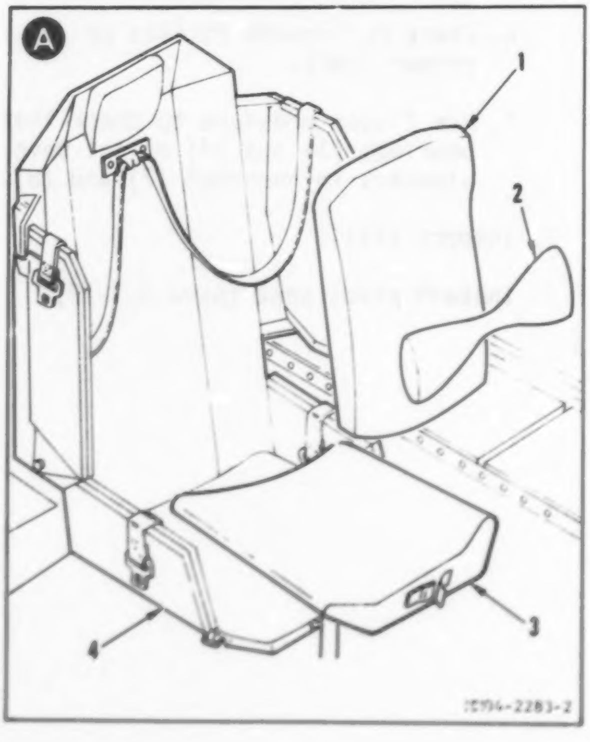
A. REMOVAL

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full up-position. This could cause severe personnel injury. If injury occurs, seek medical aid.

1. Enter pilot or CPG station (para 1-7-1). Observe all safety precautions.
2. Remove back cushions (1) and (2) and seat cushion (3) from seat (4).





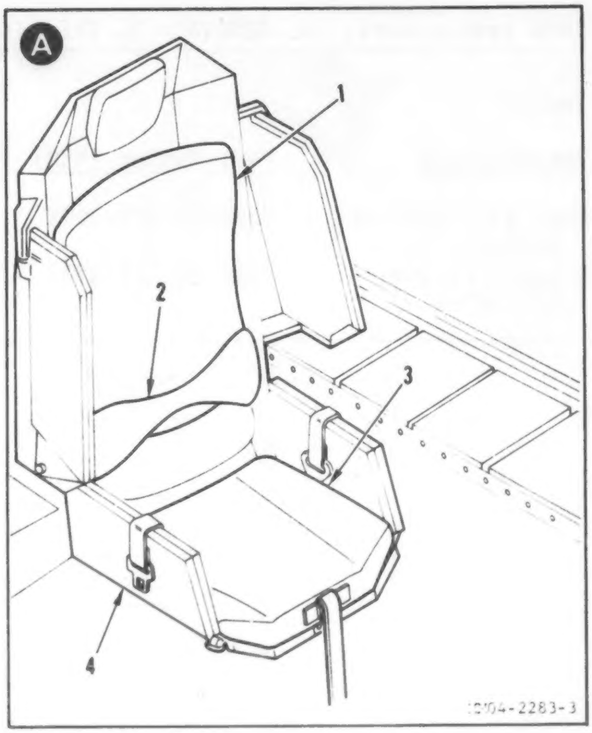
B. INSPECTION

1. Check cushions for splits or tears (TM 55-1500-204-25/1).
2. Check security of hook-and-pile fasteners on seat cushions.

GO TO NEXT PAGE

C. INSTALLATION

1. Install seat cushion (3) into seat (4).
2. Install back cushions (1) and (2) into seat (4).



END OF TASK

2-3-15. PILOT/CPG SEAT HANDLE ASSEMBLY REPLACEMENT 2-3-15

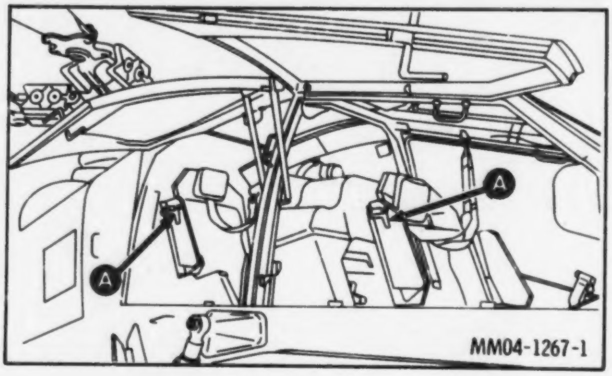
This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Personnel Required:

67R10 Attack Helicopter Repairer



GO TO NEXT PAGE

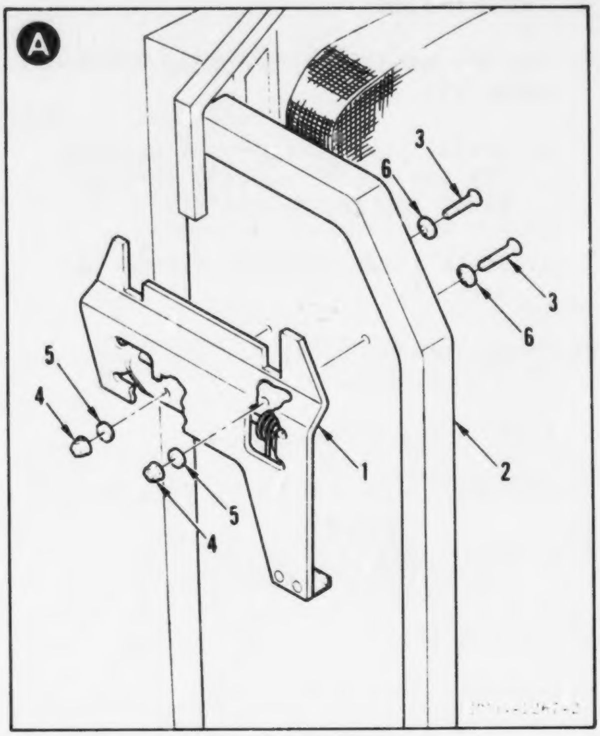
2-3-15. PILOT/CPG SEAT HANDLE REPLACEMENT (cont) 2-3-15

A. REMOVAL

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full up-position. This could cause severe personnel injury. If injury occurs, seek medical aid.

1. **Enter pilot or CPG station** (para 1-7-1). **Observe all safety precautions.**
2. **Remove handle (1) from swing panel (2).**
   - a. Hold two screws (3).
   - b. Remove two nuts (4) and two washers (5).
   - c. Remove two screws (3) and two countersunk washers (6).
   - d. Remove handle (1).



B. CLEANING

Clean attaching area of handle (para 1-5-36).

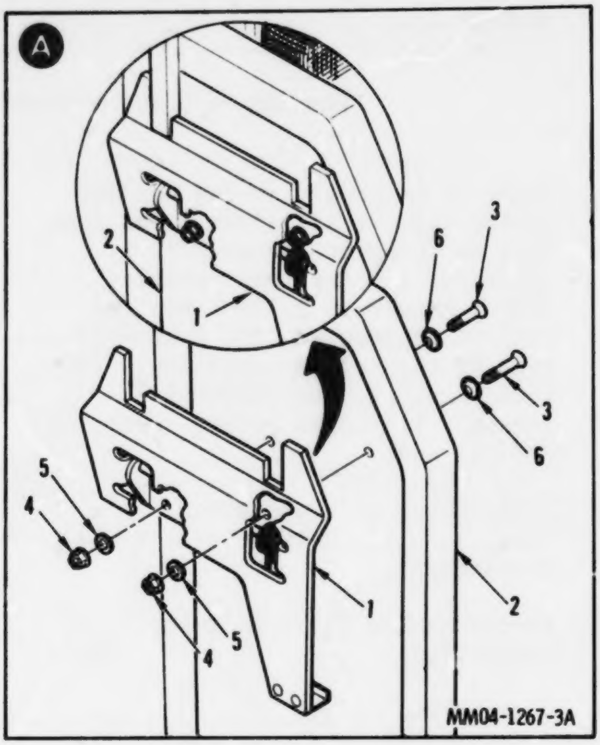
C. INSPECTION

1. **Check handle for cracks, dents, and distortions.**
2. **Check handle for corrosion** (para 1-5-38).

GO TO NEXT PAGE

best copy available

2-3-15. PILOT/CPG SEAT HANDLE REPLACEMENT (cont) 2-3-15



D. INSTALLATION

1. **Install handle (1) on swing panel (2).**
   - a. Install two countersunk washers (6) and two screws (3) through panel (2) and handle (1).
   - b. Install two washers (5) and two nuts (4).
2. **Torque two nuts (4) to 25 INCH-POUNDS.**
   - a. Hold two screws (3).
   - b. Torque nuts (4) to **25 INCH-POUNDS.**
   - c. Check operation by pulling handle (1) to release panel (2).
3. **Inspect (TI).**

END OF TASK

2-3-16. NONTRANSPARENT BARRIER ARMOR REMOVAL/INSTALLATION 2-3-16

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR
E. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

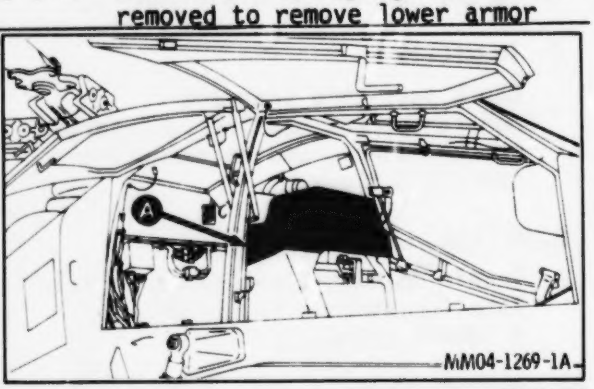
Personel Required:

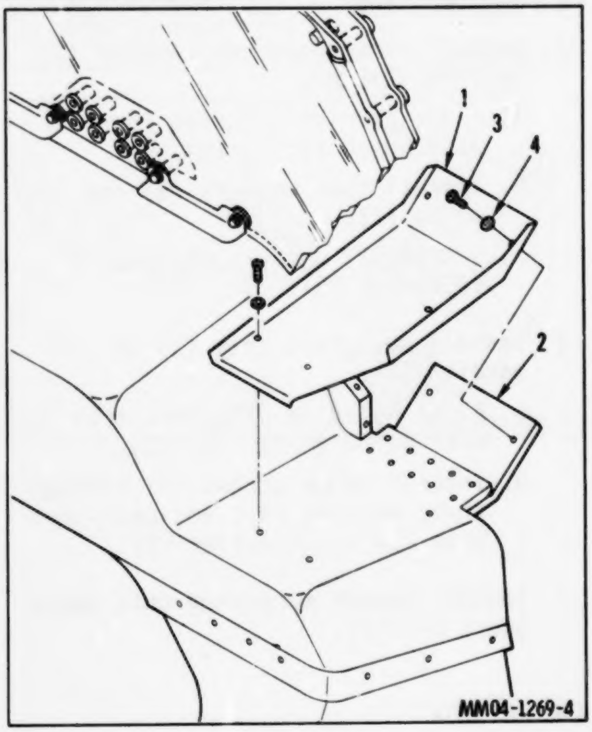
67R10 Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-77	CPG sensor surveying units connectors detached to remove upper armor only or
2-3-77	CPG sensor surveying unit mount removed to remove lower armor

A. REMOVAL





WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full up-position. This could cause severe personnel injury. If injury occurs, seek medical aid.

1. **Enter CPG station** (para 1-7-1). **Observe all safety precautions.**

2. **Remove pass-thru tray (1) from barrier (2).**

   a. Remove three screws (3), and three washers (4) from pass-thru tray (1).

   b. Remove pass-thru tray (1) from barrier (2).

GO TO NEXT PAGE

2-3-16. NONTRANSPARENT BARRIER ARMOR REMOVAL/INSTALLATION (cont) 2-3-16

3. **Remove nontransparent barrier (2).**
   - a. Remove 13 screws (5) and 13 washers (6) from barrier (2).
   - b. Remove four bolts (7) and four washers (8) from barrier (2).
   - c. Remove barrier (2) from CPG station.

B. CLEANING

Wipe pass-thru tray and nontransparent barrier with a clean rag.

C. INSPECTION

Check pass-thru tray and nontransparent barrier for wear, cracks, dents, and delamination (para 2-3-2).

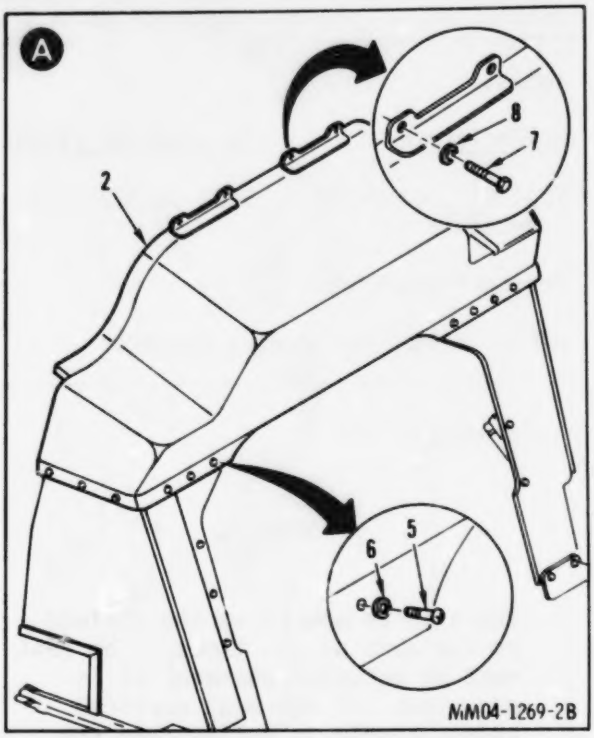
D. REPAIR

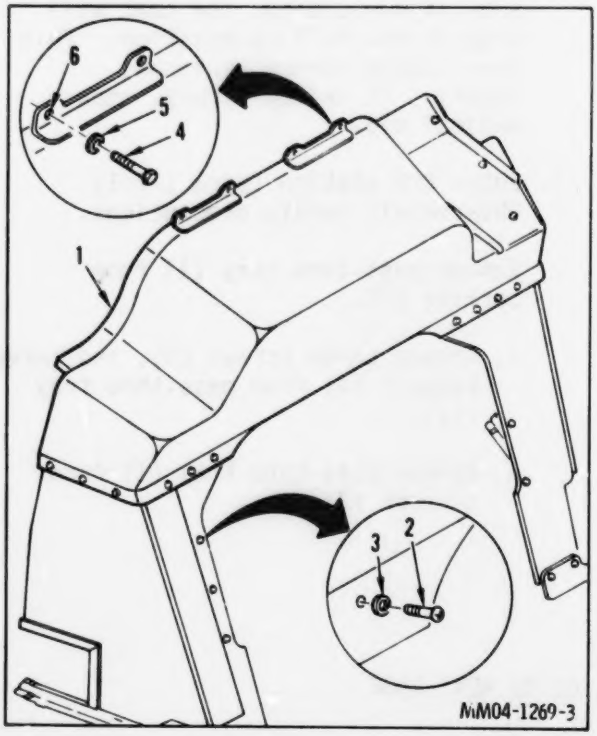
Repair delaminations (para 2-7-1). Total repair not to exceed **4 SQUARE INCHES.**

E. INSTALLATION

1. **Install nontransparent barrier (2) in crew station.**
   - a. Aline barrier (2) with four attachment points (9).
   - b. Install four washers (8) and four bolts (7).
   - c. Install 13 washers (6) and 13 screws (5).
2. **Install pass-thru tray (1) on barrier (2).**
   - a. Aline holes in pass-thru tray (1) with holes in barrier (2).
   - b. Install three screws (3) through three washers (4), and pass-thru tray (1) into barrier (2).
3. **Install sensor surveying unit mount** (para 2-3-77).

END OF TASK





2-3-17. PILOT/CPG LAP BELT REPLACEMENT 2-3-17

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

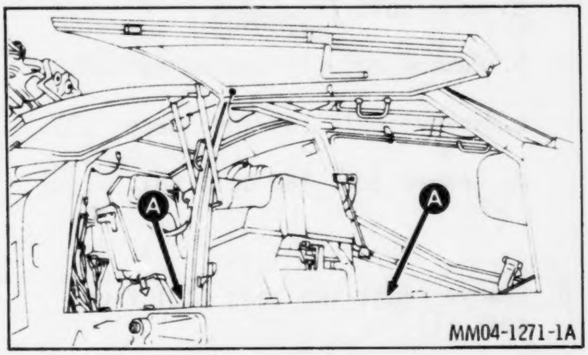
References:

TM 55-1500-204-25/1

Equipment Conditions:

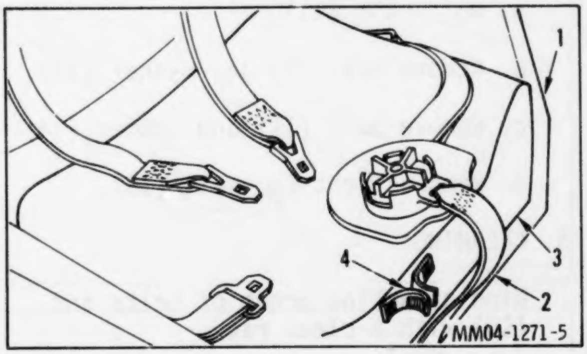
Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL



WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full up-position. This could cause severe personnel injury. If injury occurs, seek medical aid.

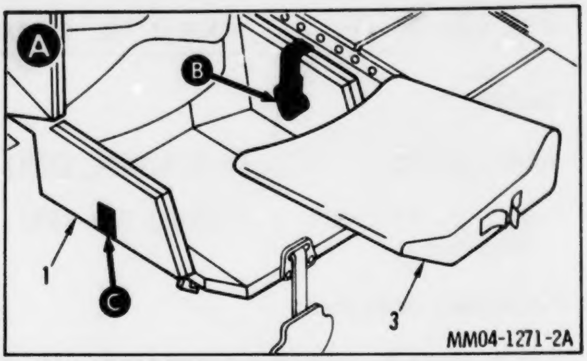


1. Enter pilot or CPG station (para 1-7-1). Observe all safety precautions.
2. Move seat (1) to full up position.
3. Release buckle and crotch strap (2) from seat cushion (3). Pull tape (4) to release crotch strap (2) from seat cushion (3).

GO TO NEXT PAGE

2-3-17. PILOT/CPG LAP BELT REPLACEMENT (cont) 2-3-17

4. Remove seat cushion (3) from seat (1).



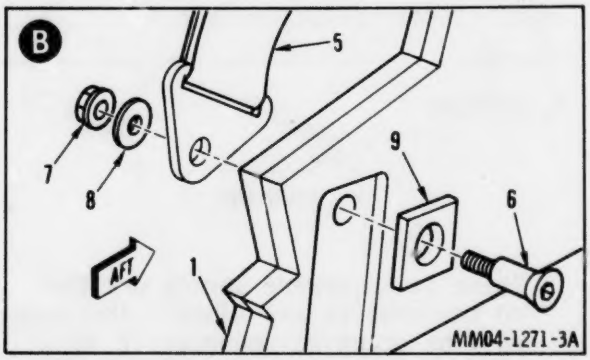
5. Remove left lap belt (5) from seat (1).

a. Hold bolt (6).

b. Remove nut (7) and washer (8).

c. Remove bolt (6) and spacer (9).

d. Remove left lap belt (5).



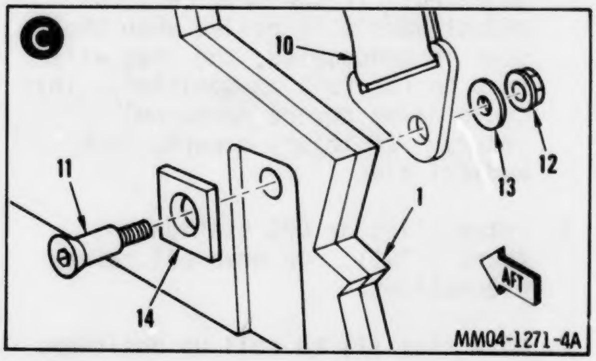
6. Remove right lap belt (10) from seat (1).

a. Hold bolt (11).

b. Remove nut (12) and washer (13).

c. Remove bolt (11) and spacer (14).

d. Remove right lap belt (10).



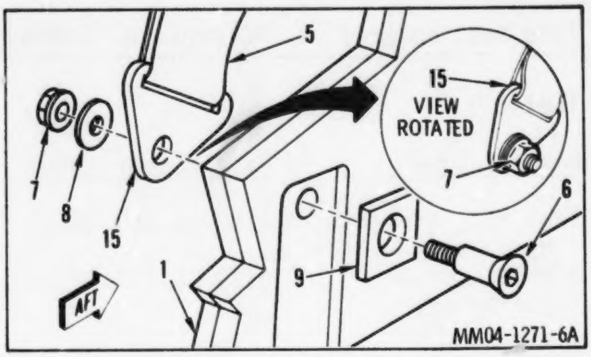
B. CLEANING

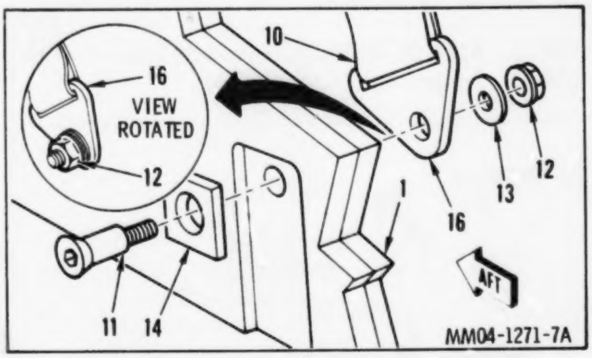
Wipe attaching areas of belts and (10) with a clean rag.

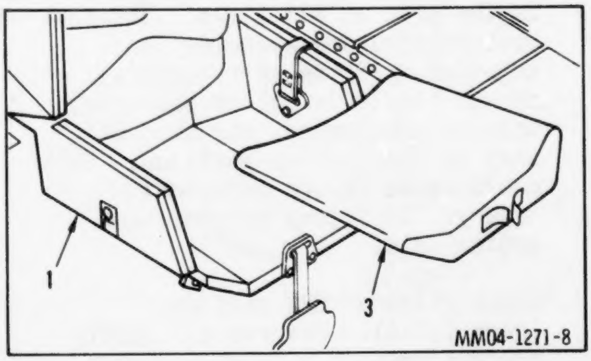
C. INSPECTION

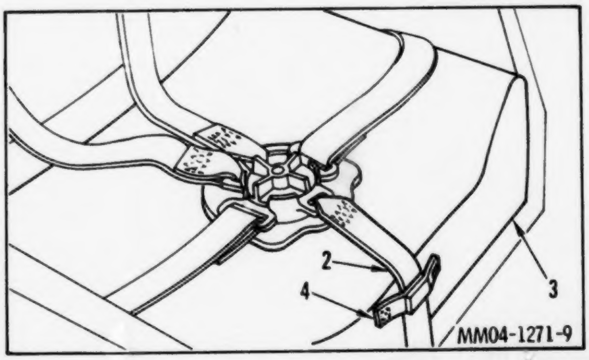
Check attaching areas of belts for wear (TM 55-1500-204-25/1).

GO TO NEXT PAGE









D. INSTALLATION

1. **Install belt (5) on seat (1).**
   a. Insert bolt (6) through spacer (9), seat (1), and retainer (15).
   b. Hold bolt (6).
   c. Install washer (8) and nut (7).
   d. Tighten, then loosen nut (7) to allow retainer (15) to move freely.
2. **Install belt (10) on seat (1).**
   a. Insert bolt (11) through spacer (14), seat (1), and retainer (16).
   b. Hold bolt (11).
   c. Install washer (13) and nut (12).
   d. Tighten, then loosen nut (12) to allow retainer (16) to move freely.
3. **Install cushion (3) into seat (1).**
4. **Attach strap (2) to seat cushion (3).**
   a. Lay buckle and strap (2) on seat cushion (3).
   b. Fasten straps (4) around strap (2).
5. **Inspect (TI).**

END OF TASK

2-3-18. PILOT/CPG ROTARY BUCKLE REPLACEMENT 2-3-18

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-1500-204-25/1

Equipment Conditions:

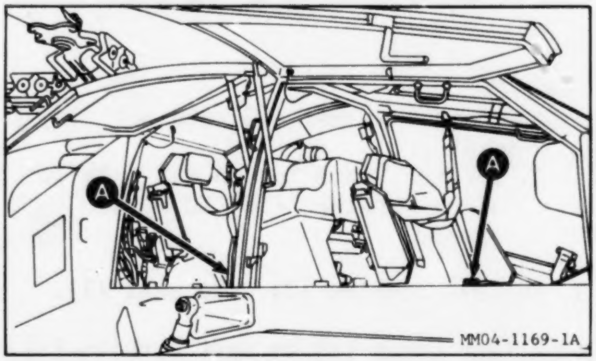
Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full up-position. This could cause severe personnel injury. If injury occurs, seek medical aid.

1. **Enter pilot or CPG station (para 1-7-1). Observe all safety precautions.**



GO TO NEXT PAGE

2-3-18. PILOT/CPG ROTARY BUCKLE REPLACEMENT (cont) 2-3-18

2. **Remove rotary buckle (1) and strap (2) from seat (3).**
   - a. Insert 3/32 key into end of two pin rivets (4) to hold rivets in place.
   - b. Remove two nuts (5) and washers (6).
   - c. Remove two pin rivets (4) and crotch strap anchor (9) from seat (3)
   - d. Pull tape (7) at seat cushion (8) and remove strap (2) with rotary buckle (1).

B. CLEANING

Wipe attaching area of crotch strap anchor on seat with a clean rag.

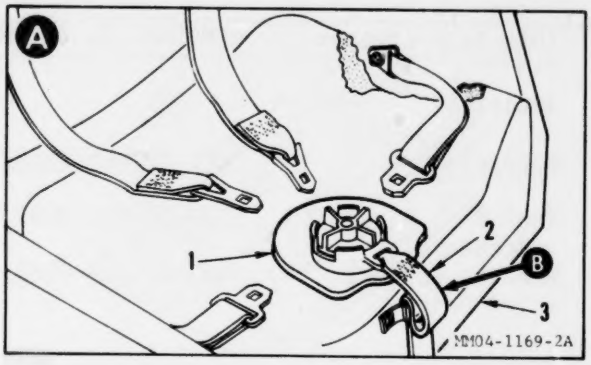
C. INSPECTION

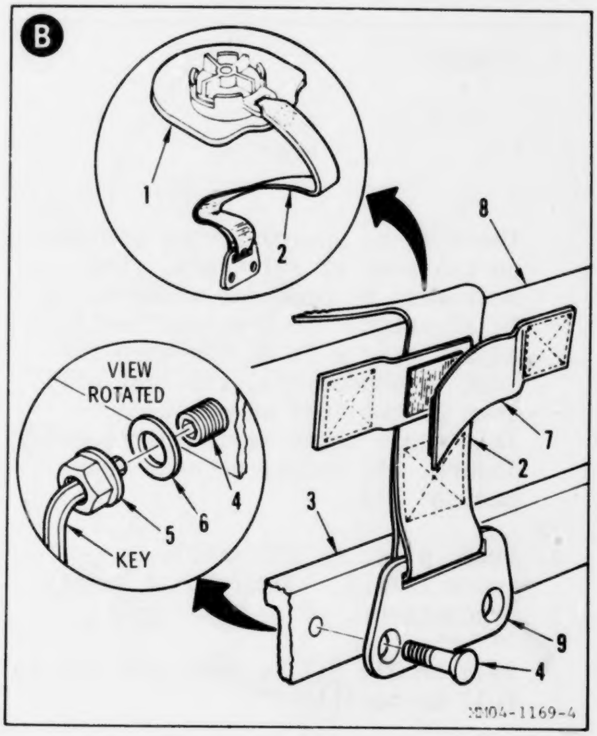
Check attaching area of crotch strap anchor on seat for excessive wear (TM 55-1500-204-25/1).

D. INSTALLATION

1. **Place rotary buckle (1) and strap (2) on seat (3).**
   - a. Install two pin rivets (4) and anchor (9) on seat (3).
   - b. Install two washers (6) and nuts (5) on two pin rivets (4).
   - c. Insert 3/32 key into end of pin rivets (4) to hold rivets in place.
   - d. Tighten two nuts (5).
   - e. Press tape (7) in place over strap (2).
2. **Torque two nuts (5) to 20 INCH-POUNDS.**
3. **Inspect (TI).**

END OF TASK





2-3-19. PILOT/CPG SHOULDER HARNESS AND INERTIA REEL REMOVAL/INSTALLATION

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

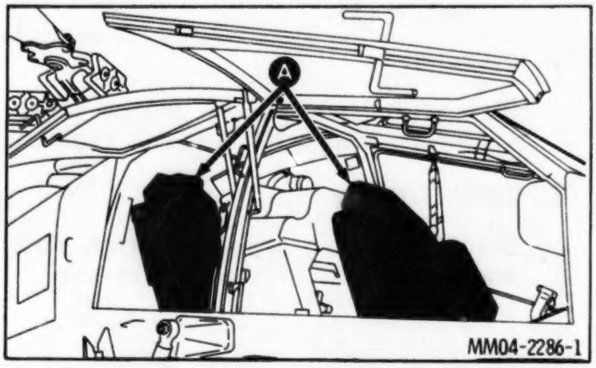
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

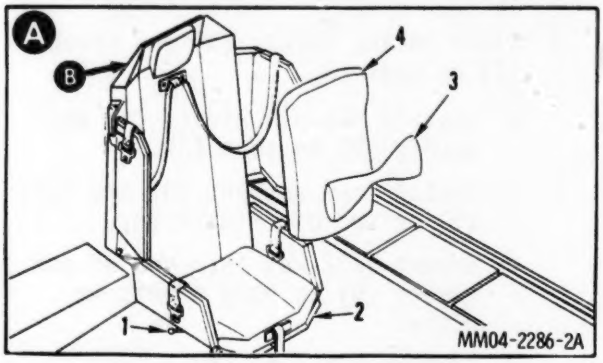
A. REMOVAL

WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full up-position. This could cause severe personnel injury. If injury occurs, seek medical aid.



MM04-2286-1



MM04-2286-2A

1. **Enter pilot or CPG station (para 1-7-1). Observe all safety precautions.**

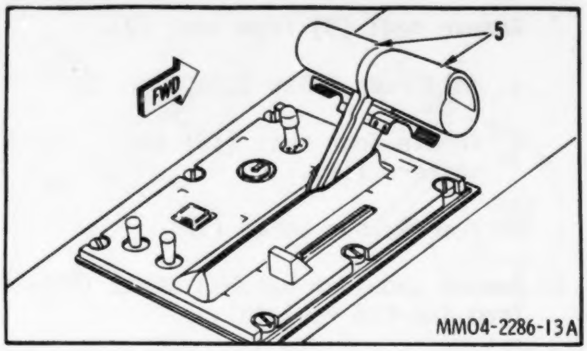
2. **Pull handle (1) to move seat (2) to full up-position.**

3. **Remove seat cushions (3) and (4) from seat (2).**

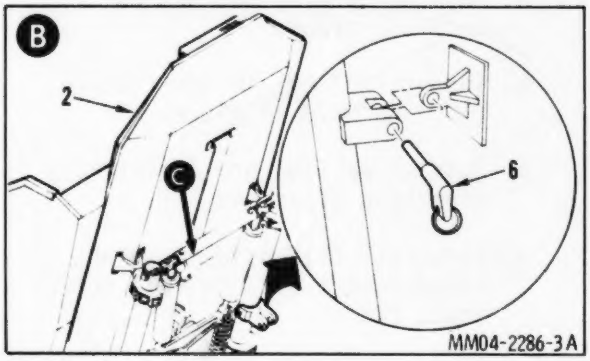
GO TO NEXT PAGE

2-3-19. PILOT/CPG SHOULDER HARNESS AND INERTIA REEL REMOVAL/INSTALLATION (cont) 2-3-19

4. **Move both engine power levers (5) forward (full power).**



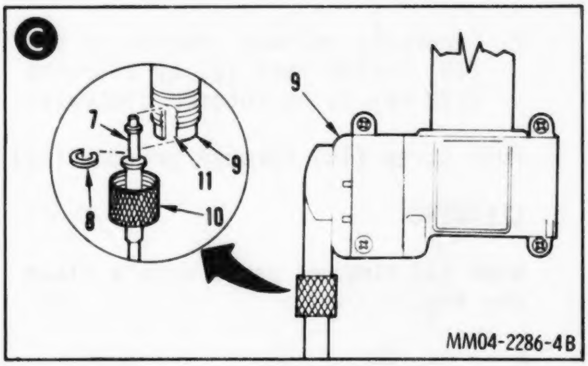
5. **Remove two upper quick-release pins (6) and tilt seat (2) forward.**



6. **Disconnect cable (7) from inertia reel (9).**

   a. Remove knurled nut (10) from reel (9). Remove slotted washer (8) from cable (7).

   b. Pull cable (7) through keyhole (11).



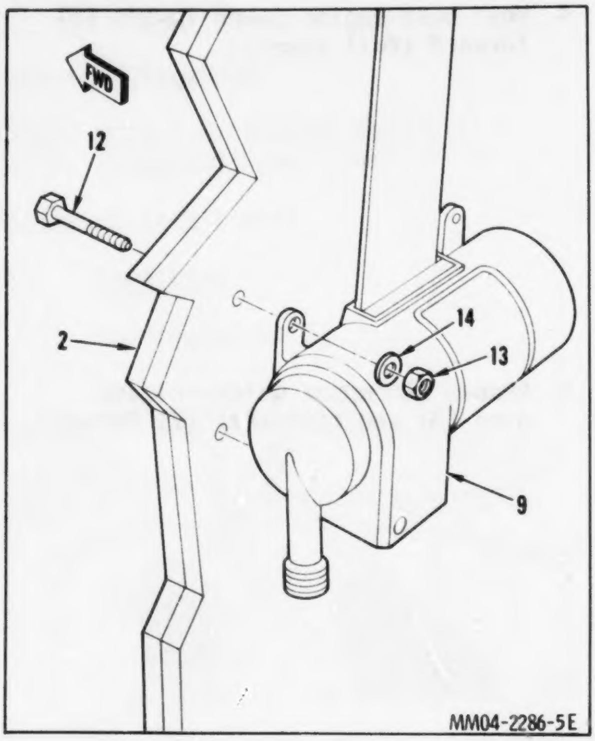
GO TO NEXT PAGE

2-3-19. PILOT/CPG SHOULDER HARNESS AND INERTIA REEL REMOVAL/INSTALLATION (cont) 2-3-19

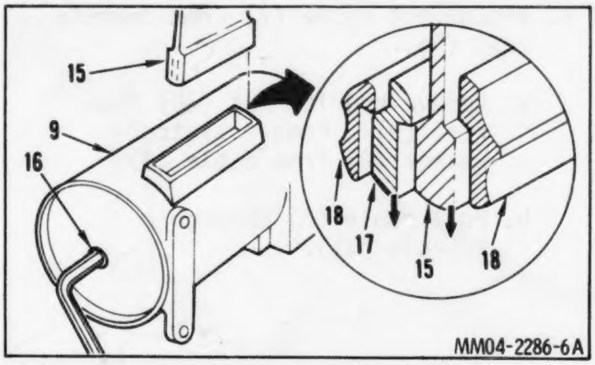
7. **Remove reel (9) from seat (2).**
   a. Hold four bolts (12).
   b. Remove four nuts (13) and washers (14).
   c. Remove four bolts (12).
8. **Remove shoulder harness strap (15) from inertia reel (9).**
   a. Pull strap (15) out of reel (9) until it stops.
   b. Insert 7/32 key in hex fitting (16) and hold in place.
   c. Push strap (15) and insert (17) in direction of arrows.
   d. Turn reel (9) upside down and allow insert (17) to fall out of shaft (18).
   e. Pull strap (15) out of shaft (18).
   f. Carefully relieve tension on shaft (18) inside reel (9) by allowing 7/32 key to be rotated clockwise.
9. **Pull strap (15) through grommet (19).**

B. CLEANING

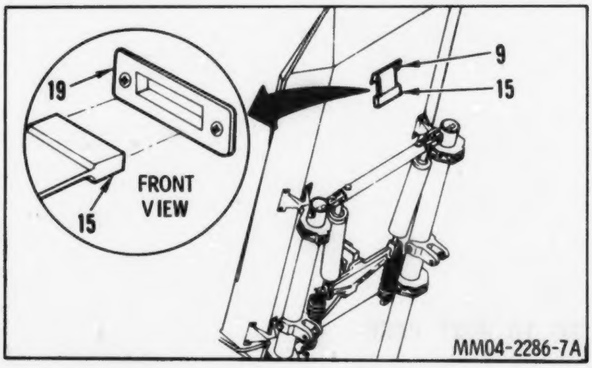
Wipe all removed parts with a clean dry rag.



MM04-2286-5E



MM04-2286-6A



MM04-2286-7A

GO TO NEXT PAGE

2-3-19. PILOT/CPG SHOULDER HARNESS AND INERTIA REEL REMOVAL/INSTALLATION (cont) 2-3-19

C. INSTALLATION

1. **Push strap (15) through grommet (19) from front of seat (2).**

2. **Install strap (15) into reel (9).**

   a. Insert 7/32 key in hex fitting (16) and turn key counterclockwise until it stops, then back off 1/2 to 1-1/2 turns and hold in place.

   b. Push strap (15) into shaft (18).

   c. Install insert (17) into shaft (18) next to strap (15). Be sure strap (15) and insert (17) are secure.

   d. Wind strap (15) into reel (9) by carefully allowing 7/32 key to be rotated counterclockwise.

3. **Install reel (9) on seat (2).**

   a. Install four bolts (12) through seat (2) and reel (9).

   b. Hold bolts (12).

   c. Install four washers (14) and nuts (13).

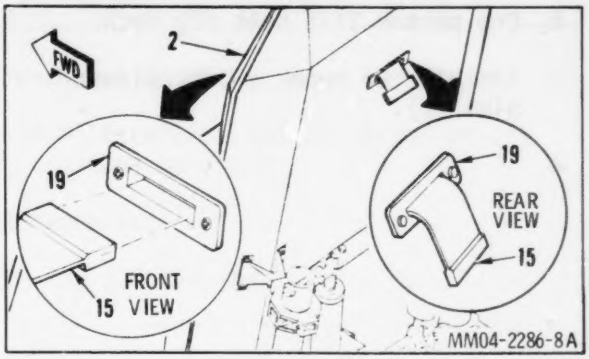
   d. Put cable (7) in keyhole (11).

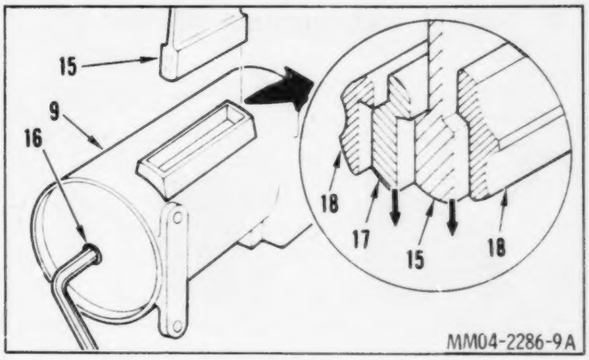
   e. Install slotted washer (8) over cable (7).

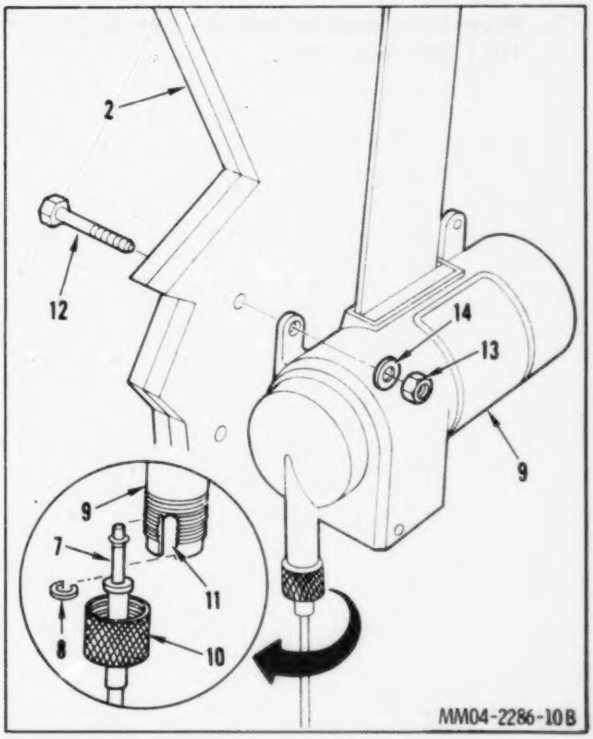
   f. Install knurled nut (10) on reel (9).

4. **Torque four nuts (13) to 20 INCH-POUNDS.** Hold four bolts (12).

5. Inspect (TI).



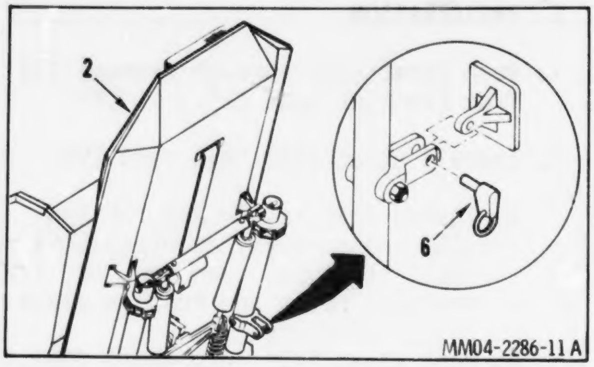




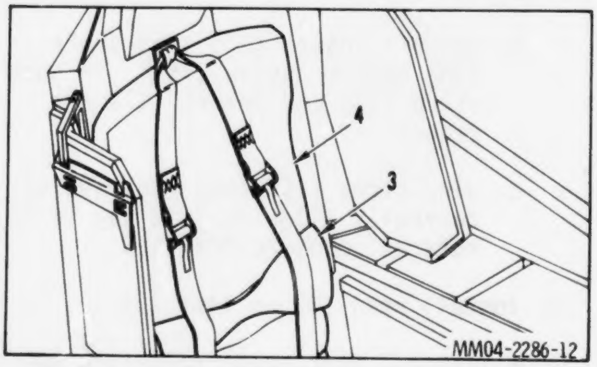
GO TO NEXT PAGE

2-3-19. PILOT/CPG SHOULDER HARNESS AND INERTIA REEL REMOVAL/INSTALLATION (cont) 2-3-19

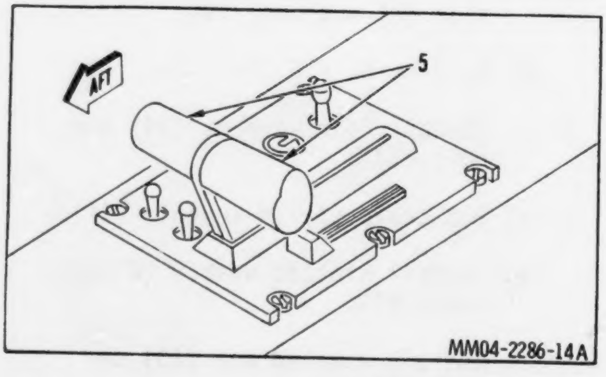
6. One person tilt seat (2) back.
7. Install two upper quick-release pins (6).



8. Install seat cushions (3) and (4).



9. Move both engine power levers (5) to full aft position.



END OF TASK

2-3-20. PILOT/CPG RESTRAINT CONTROL REPLACEMENT 2-3-20

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

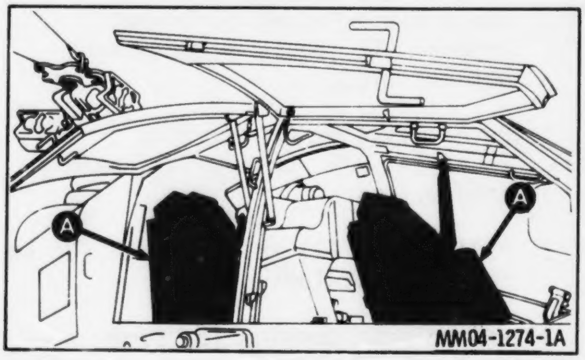
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer (2)
One to assist

References:

TM 55-1500-204-25/1



GO TO NEXT PAGE

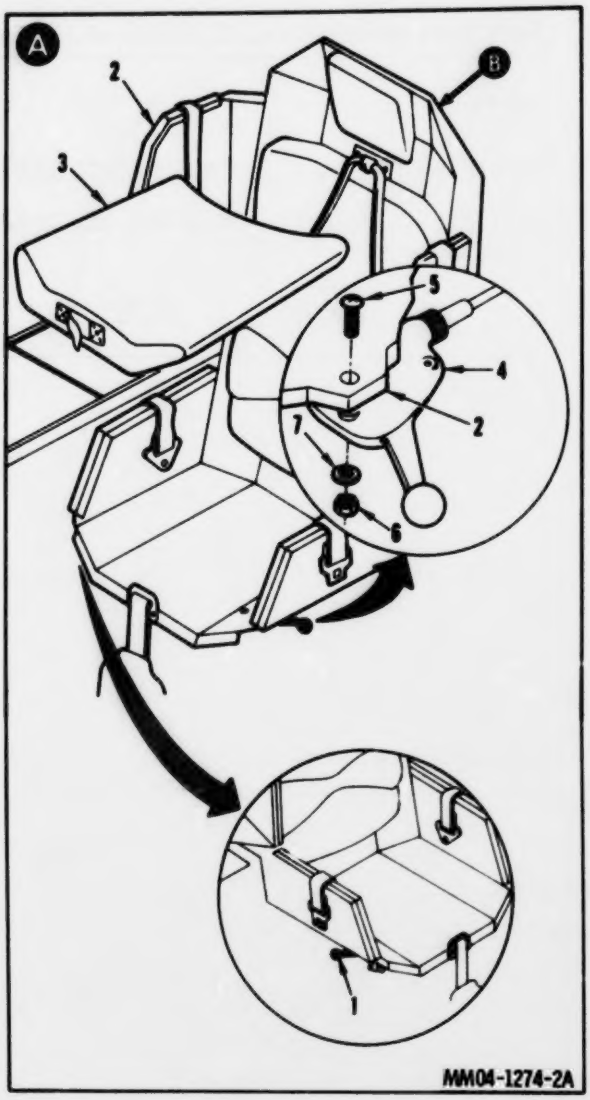
2-3-20. PILOT/CPG RESTRAINT CONTROL REPLACEMENT (cont) 2-3-20

A. REMOVAL

WARNING

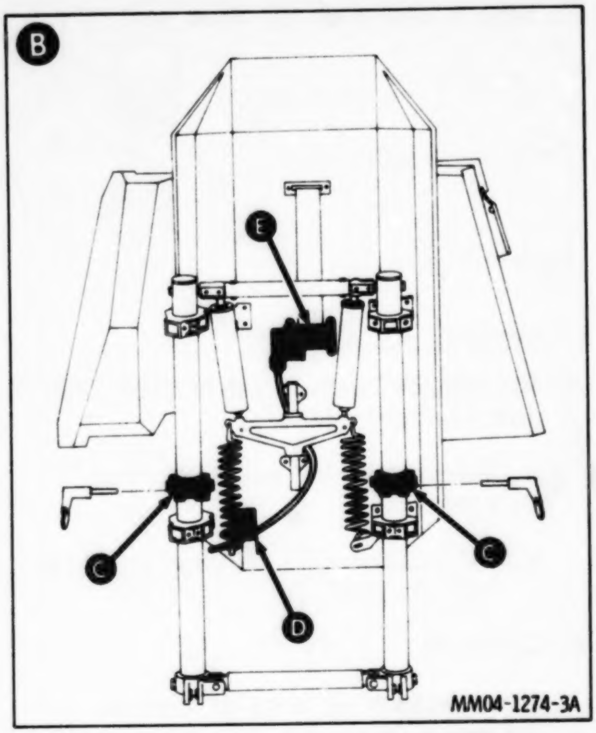
There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full up-position. This could cause severe personnel injury. If injury occurs, seek medical aid.

1. Enter pilot or CPG station (para 1-7-1). Observe all safety precautions.
2. Pull handle (1) to move seat (2) to full-up position.
3. Remove seat cushion (3) from seat (2).
4. Remove control (4) from seat (2).
   a. Hold two screws (5).
   b. Remove two nuts (6) and washers (7).
   c. Remove two screws (5).

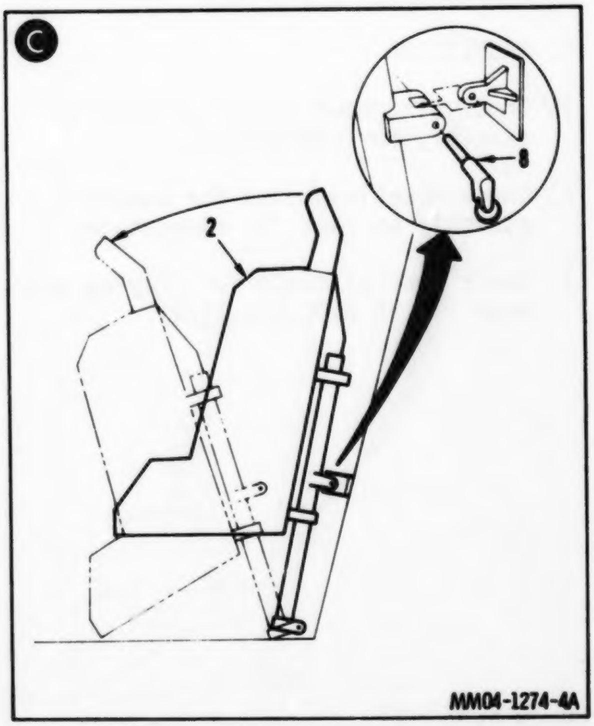


GO TO NEXT PAGE

2-3-20. PILOT/CPG RESTRAINT CONTROL REPLACEMENT (cont) 2-3-20

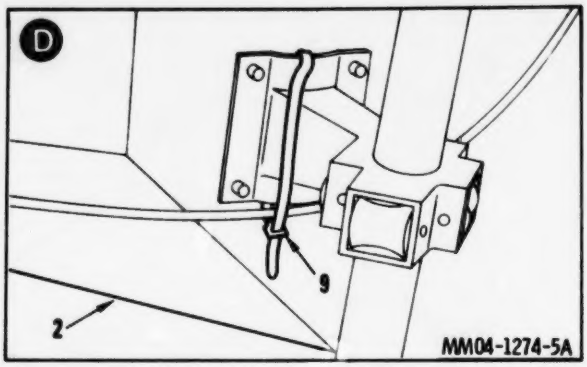


5. Remove two upper quick-release pins (8).
6. One person tilt seat (2) forward and hold in place.



GO TO NEXT PAGE

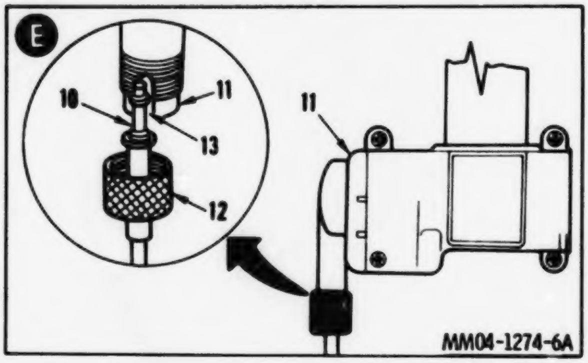
7. **Remove tie wrap (9) from seat (2).**



8. **Disconnect control cable (10) from inertia reel (11).**

   a. Remove knurled nut (12) from reel (11).

   b. Pull cable (10) through keyhole (13) in reel (11).



B. CLEANING

Clean attaching area of control assembly (para 1-5-36).

C. INSPECTION

1. **Check attachment holes of control assembly for elongation.**

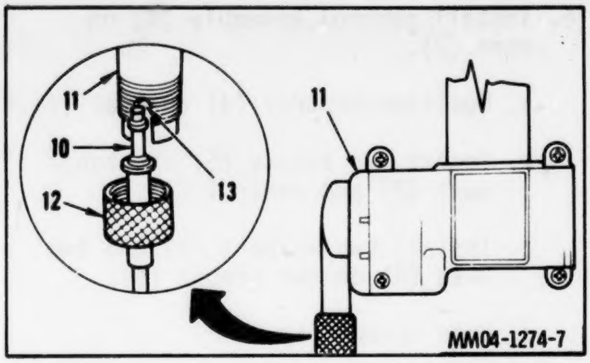
2. **Check mounting holes for control assembly on seat for elongation.**

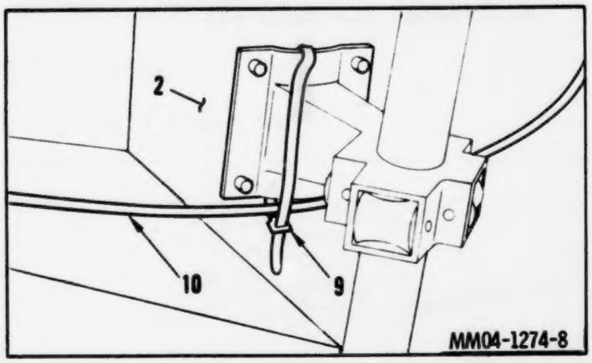
3. **Check control cable for fraying and wear (TM 55-1500-204-25/1).**

GO TO NEXT PAGE

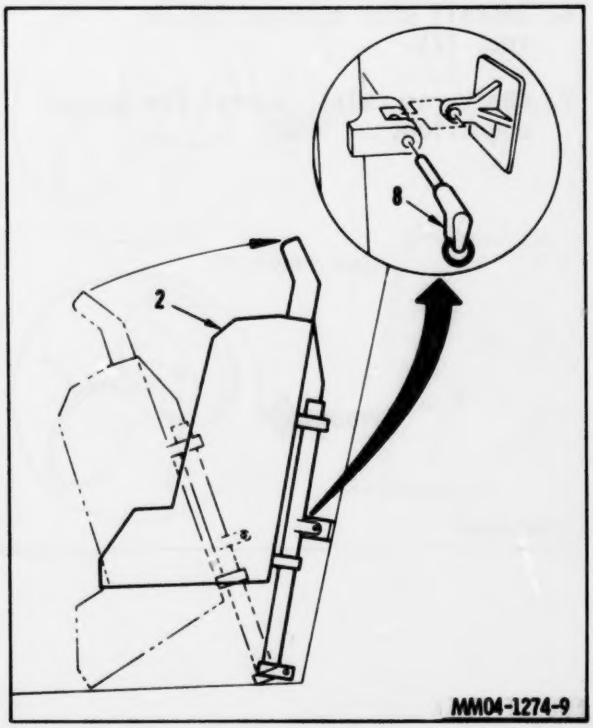
D. INSTALLATION

1. **Connect cable (10) to reel (11).**
   a. Route cable (10) to back of seat (2).
   b. Slide end of cable (10) into keyhole (13) in reel (11).
   c. Install knurled nut (12) on reel (11).
2. **Install tie wrap (9) around cable (10) and seat (2).**





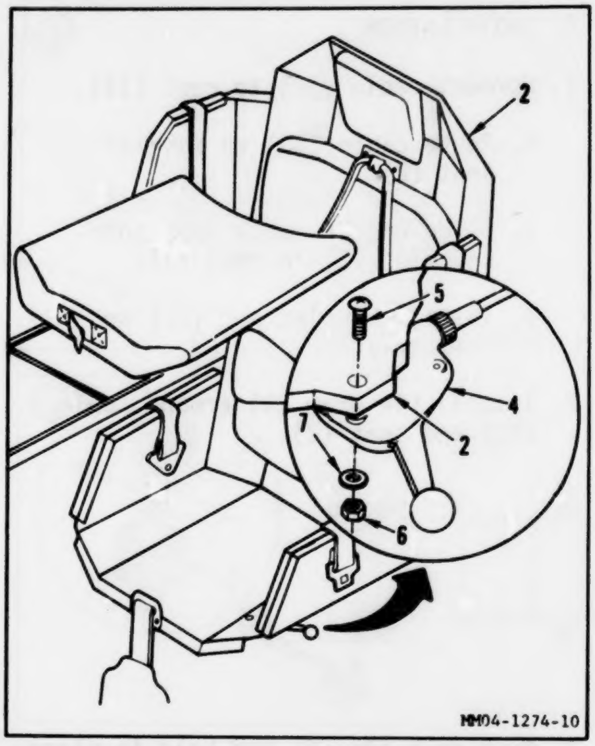
3. **Push seat (2) aft and hold in place.**
4. **Install two upper quick-release pins (8).**



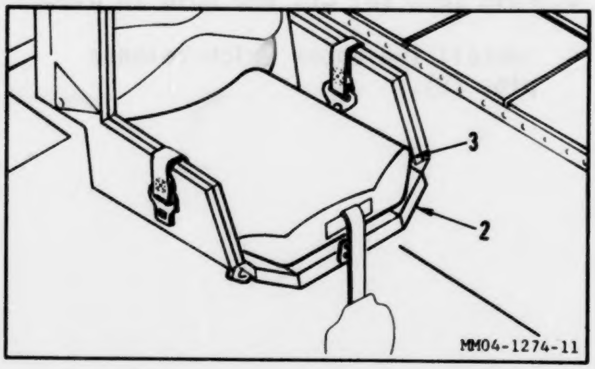
GO TO NEXT PAGE

2-3-20. PILOT/CPG RESTRAINT CONTROL REPLACEMENT (cont) 2-3-20

5. Install control assembly (4) on seat (2).
   a. Position control (4) on seat (2).
   b. Insert two screws (5) through seat (2) and control (4).
   c. Install two washers (7) and two nuts (6) on two screws (5).
   d. Hold screws (5).
   e. Tighten two nuts (6).



6. Install seat cushion (3) on seat (2).
7. Check restraint control for proper operation.



END OF TASK

2-3-21. PILOT/CPG STATION ACCESS DOOR CANOPY LOCK REMOVAL/INSTALLATION 2-3-21

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832
Crowfoot Attachment 7/8, 3/8 Drive	5120-00-541-4071

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-1520-238-CL

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

NOTE

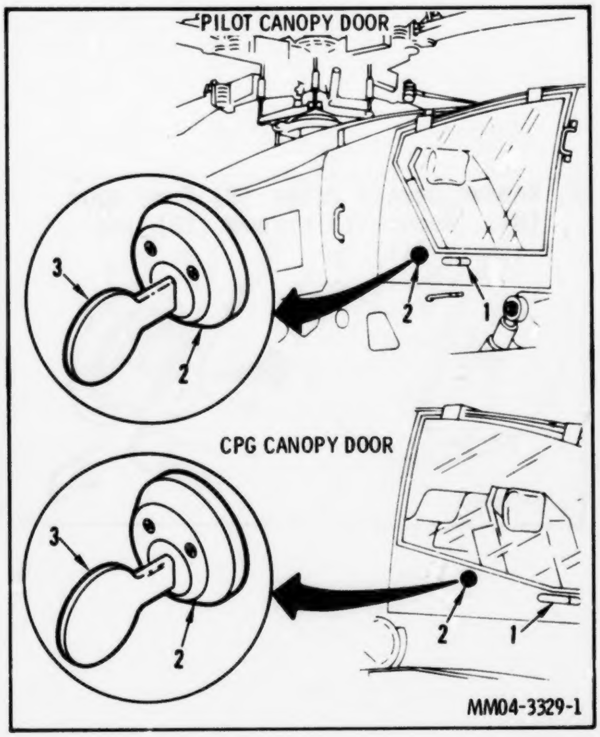
The following task is typical for both pilot and CPG canopy door locks except where noted.

Pilot and CPG door lock and door handle locations differ.

A. **REMOVAL**

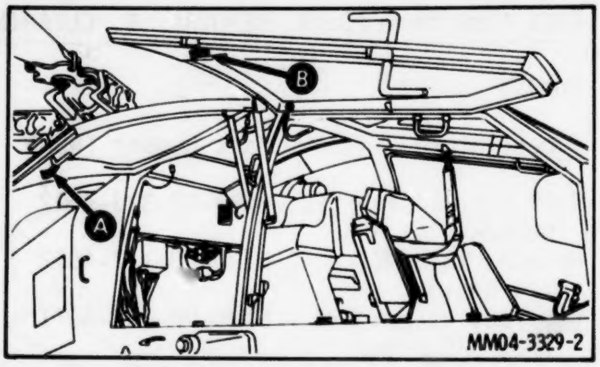
1. **Enter pilot/CPG station (para 1-7-1). Observe all safety precautions.**

2. **Verify canopy access door handle (1) is set to the closed position** (TM 55-1520-238-CL). Set canopy door lock (2) to lock position, using key (3).



GO TO NEXT PAGE

2-3-21. PILOT/CPG STATION ACCESS DOOR CANOPY LOCK REMOVAL/ INSTALLATION (cont) 2-3-21

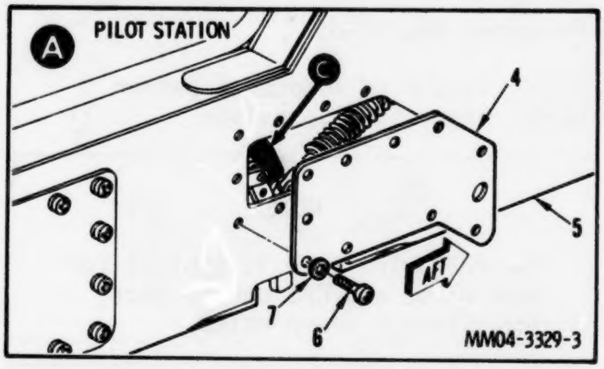


MM04-3329-2

NOTE

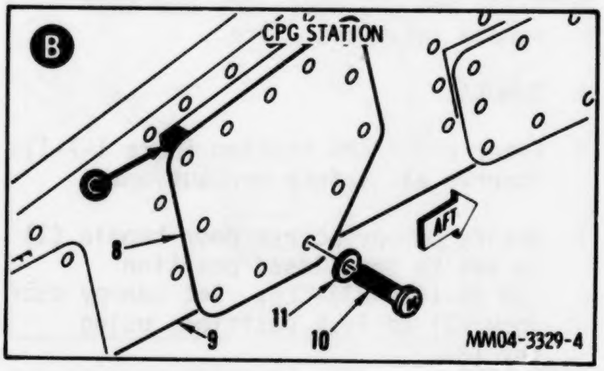
Perform step 3 for pilot canopy door lock removal. Perform step 4 for CPG canopy door lock removal.

3. **Remove access cover (4) from door (5).** Remove 10 screws (6) and washers (7).



MM04-3329-3

4. **Remove access cover (8) from door (9).** Remove 13 screws (10) and washers (11).

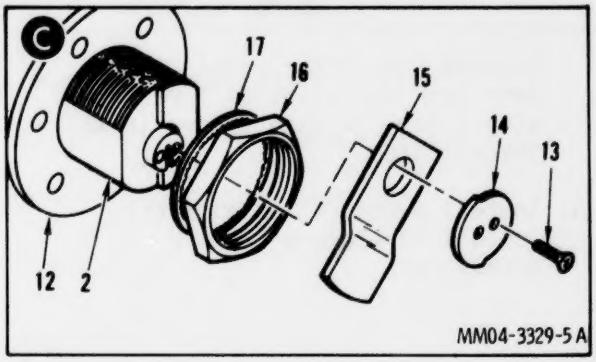


MM04-3329-4

GO TO NEXT PAGE

2-3-21. PILOT/CPG STATION ACCESS DOOR CANOPY LOCK REMOVAL/INSTALLATION (cont) 2-3-21

5. **Remove lock (2) from door doubler (12).**
   a. Remove two screws (13), cam plate (14), and lock lever (15).
   b. Remove nut (16) and lock washer (17).



B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

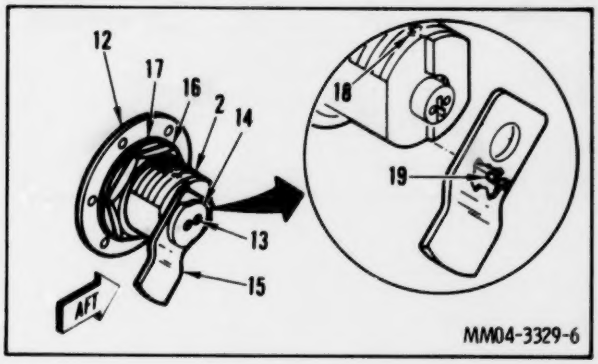
Check mounting surface for dents, cuts or cracks.

D. INSTALLATION

NOTE

Lock alinement key must face up for proper lock operation.

1. **Install lock (2) on doubler (12).**
   a. Install lock (2), lock washer (17), and nut (16).
   b. Torque nut (16) to **25 INCH-POUNDS.**



NOTE

To prevent improper lock operation, aline lock lever with raised half of lever angled down and index key against lower raised section of lock.

2. **Install lever (15) angled down and index tab (19) against lower raised section of lock (2).**
3. **Install plate (14) with smaller radius of cam plate facing aft.** Install two screws (13).

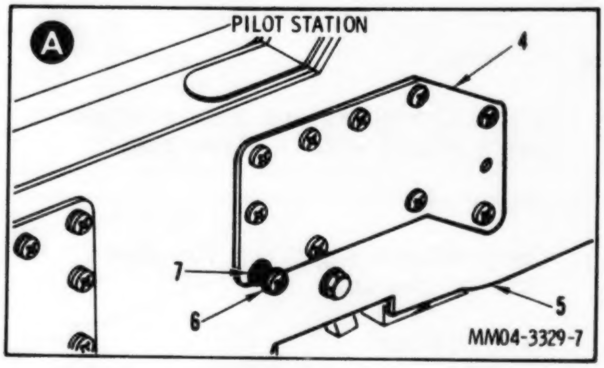
GO TO NEXT PAGE

2-3-21. PILOT/CPG STATION ACCESS DOOR CANOPY LOCK REMOVAL/ INSTALLATION (cont) 2-3-21

NOTE

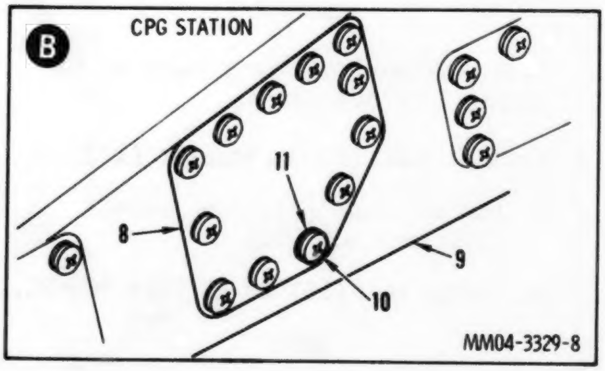
Perform step 4 for pilot canopy door lock installation. Perform step 5 for CPG canopy door lock installation.

4. **Install cover (4) on door (5).** Install 10 washers (7) and screws (6).



5. **Install cover (8) on door (9).** Install 13 washers (11) and screws (10).

6. **Inspect (TI).**



END OF TASK

2-3-22. PILOT STATION ACCESS DOOR REMOVAL/INSTALLATION 2-3-22

This task covers: A. REMOVAL B. INSPECTION C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Materials/Parts:

	Cotter Pin (2)
	Packing
(E15)	Lockwire
(E16)	Petrolatum
(E41)	Tape, Duct

Personnel Required:

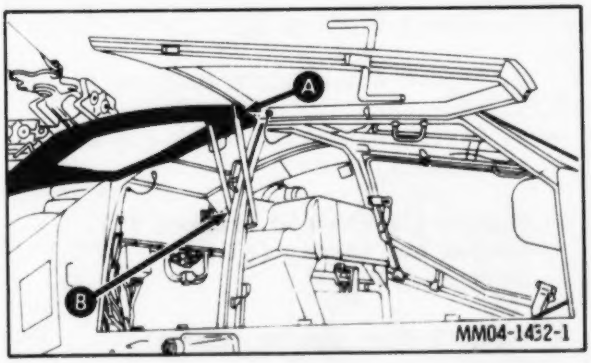
67R10	Attack Helicopter Repairer (2) One to support access door
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
13-3-4	Pilot right defog air mixer removed

A. REMOVAL

1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**



GO TO NEXT PAGE

2-3-22. PILOT STATION ACCESS DOOR REMOVAL/INSTALLATION (cont) 2-3-22

CAUTION

Remove detonating cord assembly with care. Do not twist cord or damage booster cup on end of cord assembly. Damage to cord or cup may affect performance of severance assembly.

NOTE

One person support pilot access door during removal.

2. **Remove detonating cord (1) from initiation block (2).**

   a. Remove lockwire.

   b. Hold block (2).

   c. Remove fitting (3).

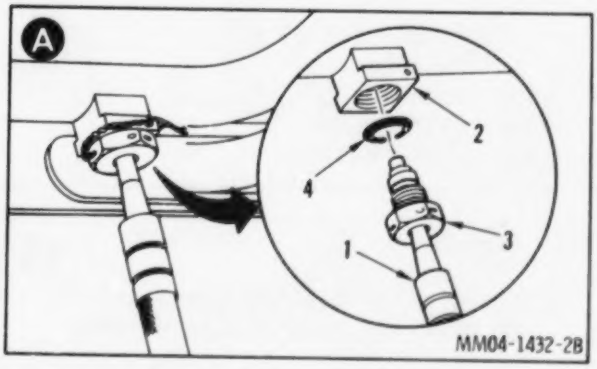
   d. Remove and discard packing (4).

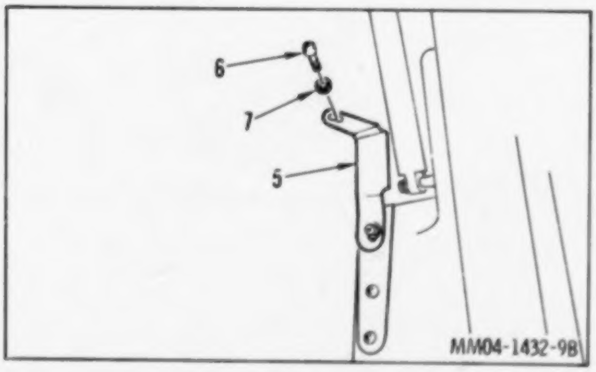
   e. Cover initiation block (2) and detonating cord (1).

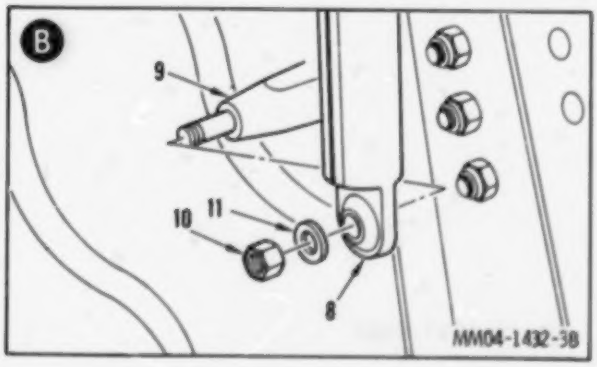
3. **Remove glareshield bracket (5).** Remove two screws (6) and washers (7).

4. **Support door during removal.**

5. **Remove door strut lower end (8) from anchor (9).** Remove nut (10) and washer (11). Secure strut to door. Use duct tape (E41).







GO TO NEXT PAGE

2-3-22. PILOT STATION ACCESS DOOR REMOVAL/INSTALLATION (cont) 2-3-22

6. Separate hinge halves (12) and (13).

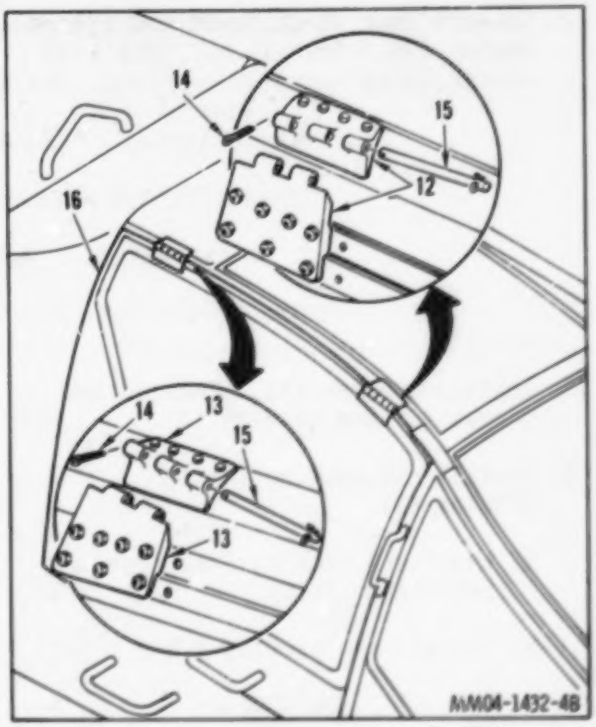
   a. Remove and discard two cotter pins (14).

   b. Remove two hinge pins (15).

7. Remove access door (16).

B. INSPECTION

Check for worn or damaged parts. Any break in the canopy detonating cord requires replacement.



C. INSTALLATION

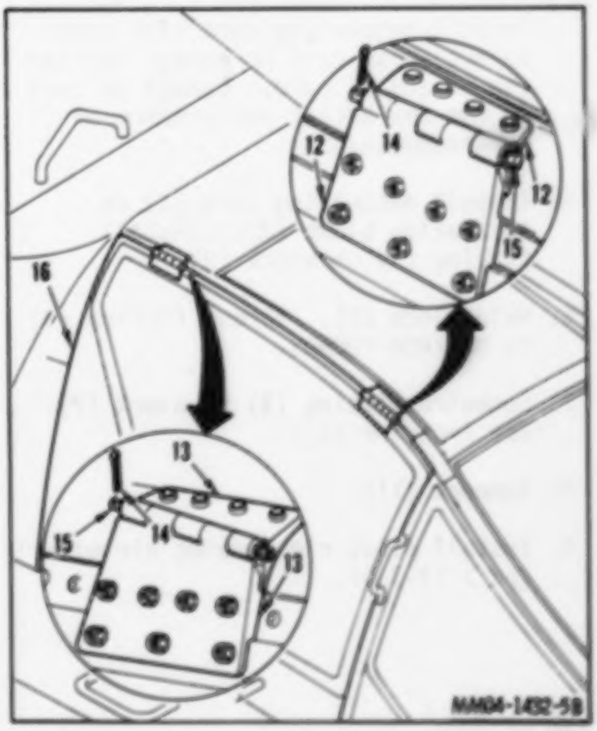
CAUTION

One person aline and support pilot access door during installation.

1. Connect halves (12) and (13).

   a. Install pin (15) in each half (12) and (13).

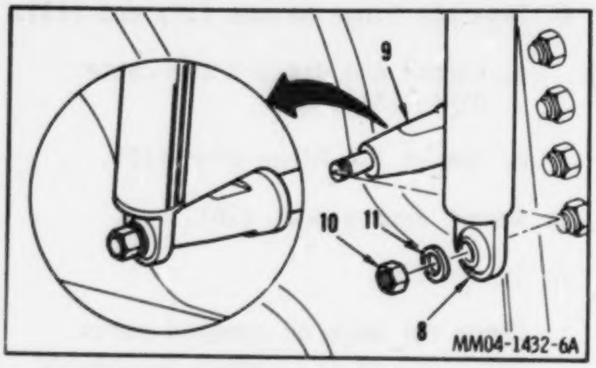
   b. Install two new cotter pins (14) in pins (15).



GO TO NEXT PAGE

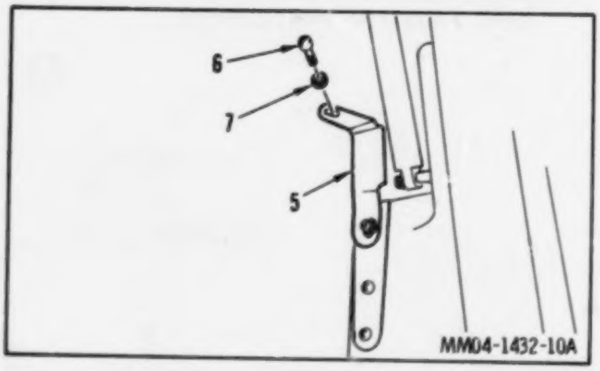
2-3-22. PILOT STATION ACCESS DOOR REMOVAL/INSTALLATION (cont) 2-3-22

2. **Connect door strut lower end (8) to anchor (9).** Install nut (10) with washer (11).



MM04-1432-6A

3. **Install bracket (5).** Install two screws (6) and washers (7).



MM04-1432-10A

4. **Install new packing (4) on fitting (3).**

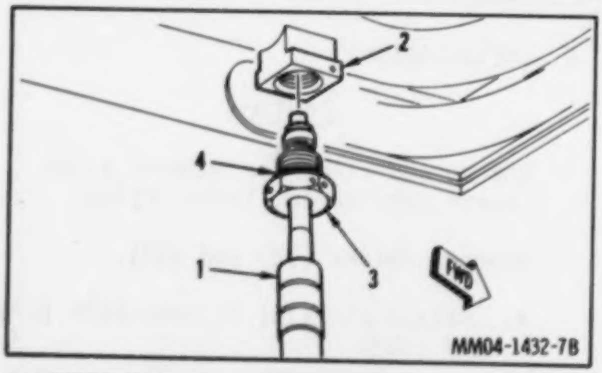
   a. Lubricate packing (4). Use petrolatum (E16).

   b. Install new packing (4).

CAUTION

Install detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

5. **Install detonating cord (1) on initiation block (2).** Install fitting (3) on block (2).



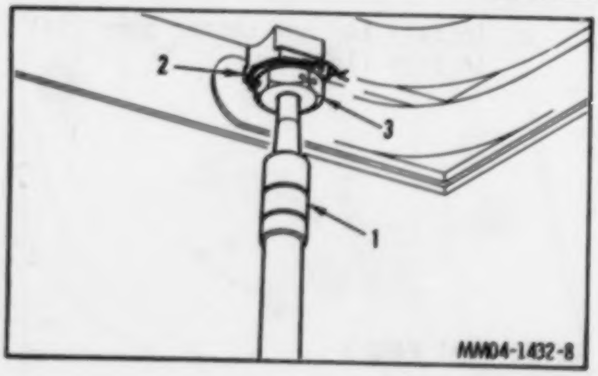
MM04-1432-7B

6. **Hold block (2).** Torque fitting (3) to **80 INCH-POUNDS.**

7. **Lockwire fitting (3) to block (2).** Use lockwire (E15).

8. **Inspect (TI).**

9. **Install pilot right defog air mixer** (para 13-3-5).



MM04-1432-8

END OF TASK

2-3-23. PILOT STATION ACCESS DOOR ADJUSTMENT 2-3-23

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

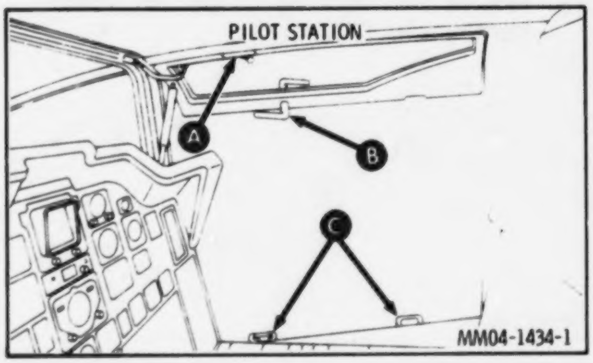
Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. Enter pilot station (para 1-7-1). Observe all safety precautions.



GO TO NEXT PAGE

2-3-23. PILOT STATION ACCESS DOOR ADJUSTMENT (cont) 2-3-23

2. **Remove access cover (1) from door (2).**

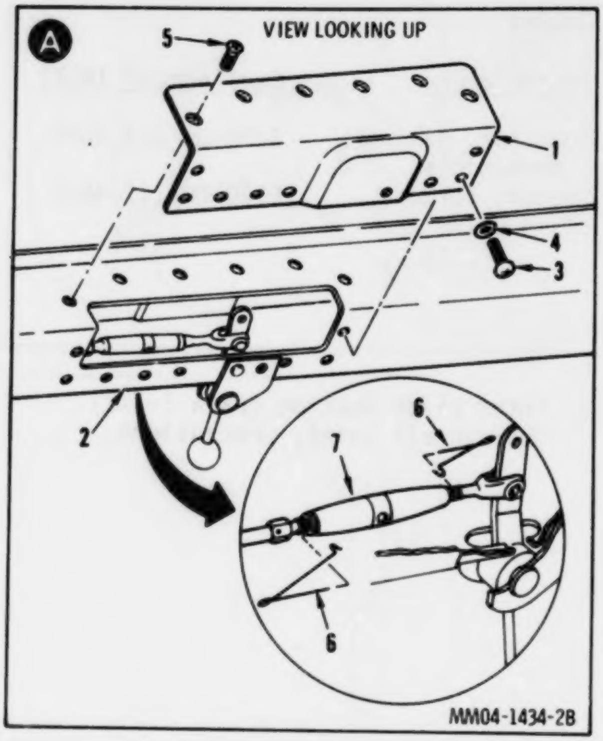
NOTE

One person support door.

   a. Remove nine screws (3) and washers (4).

   b. Remove six countersunk screws (5).

3. **Remove two locking clips (6) from turnbuckle (7).**

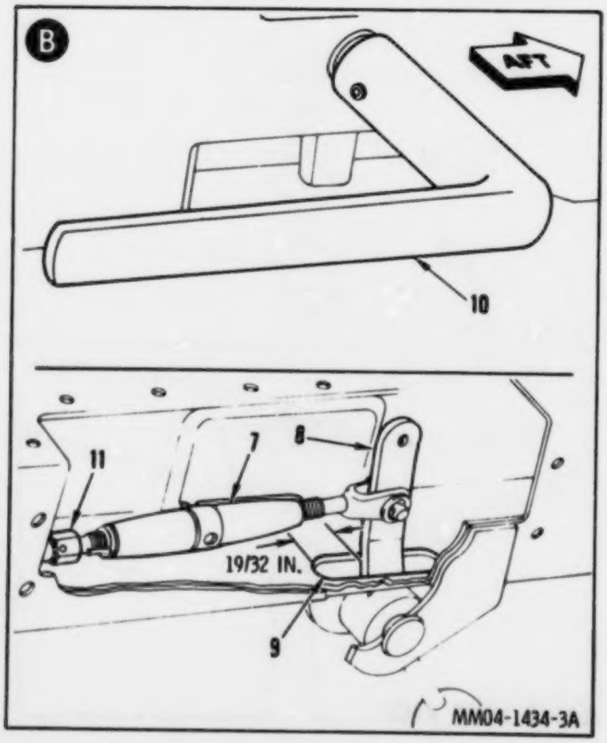


4. **Adjust lever (8) to 19/32-inch from stop (9).**

   a. Place door handle (10) in fully closed and locked position.

   b. Hold cable (11).

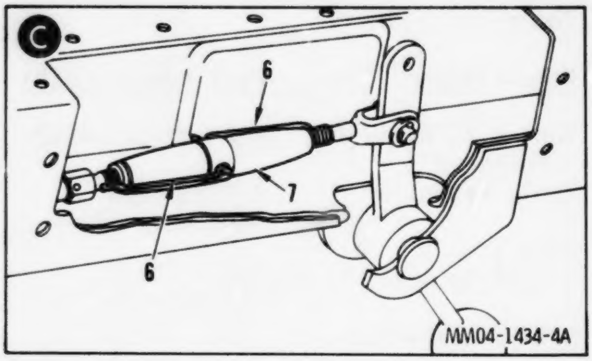
   c. Rotate turnbuckle (7) until lever (8) is 19/32 inch from aft stop (9).



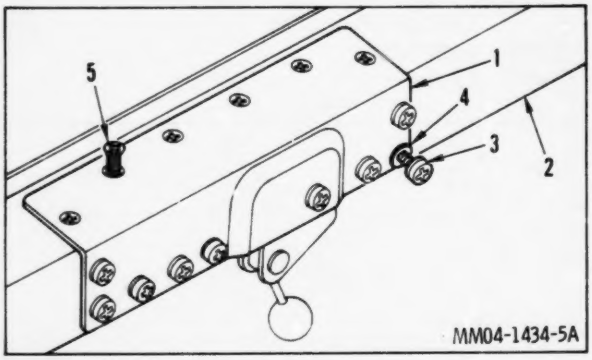
GO TO NEXT PAGE

2-3-23. PILOT STATION ACCESS DOOR ADJUSTMENT (cont) 2-3-23

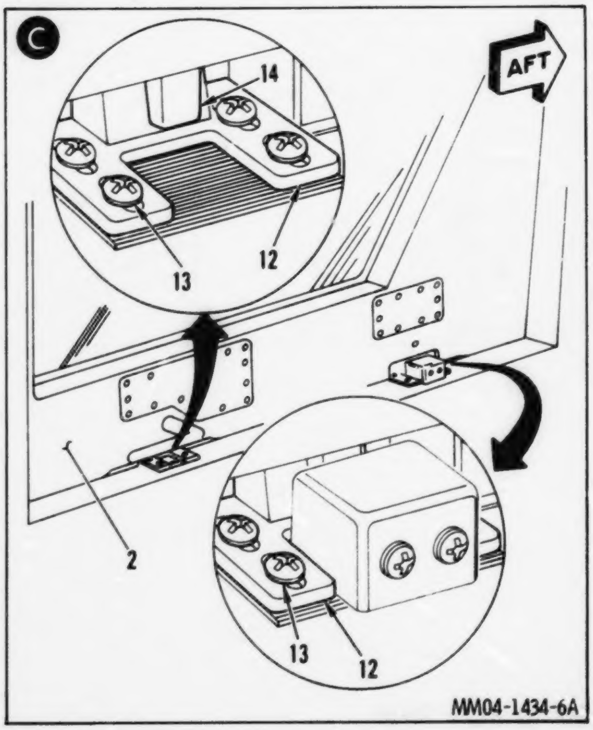
5. **Install two locking clips (6) in turnbuckle (7).**



6. **Install cover (1) on door (2).**
   a. Install nine washers (4) and screws (3).
   b. Install six countersunk screws (5).



7. **Adjust two door latch striker plates (12).**
   a. Loosen eight screws (13) on striker plates (12).
   b. Hold door (2) closed.
   c. Position two striker plates (12) against door locking bars (14).
8. **Torque eight screws (13) to 20 INCH-POUNDS.**
9. **Inspect (TI).**



END OF TASK

2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR 2-3-24

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Tool, Retention	7-3621MF003 (Appendix D)
Dowel, 3/16 by 15/16	

Materials/Parts:

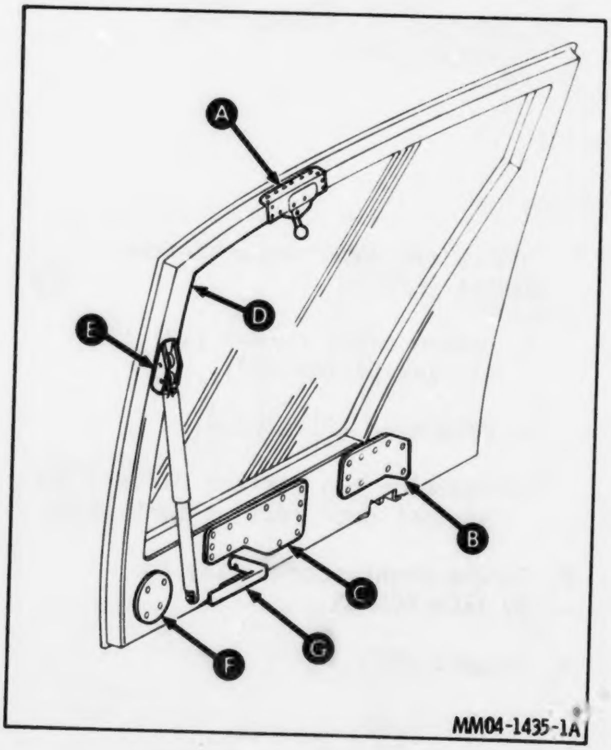
	Cotter Pin (8)
(E48)	Lubricant
(E49)	Lockwire

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-38	Pilot door transparent panel removed



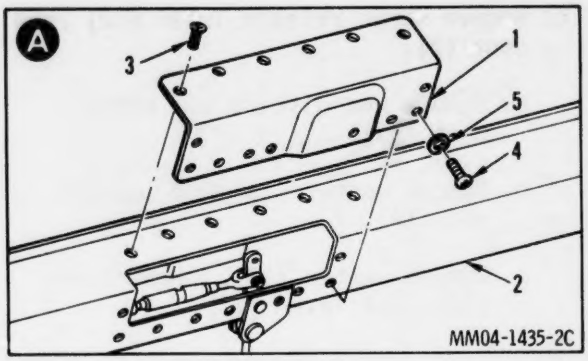
GO TO NEXT PAGE

2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR (cont) 2-3-24

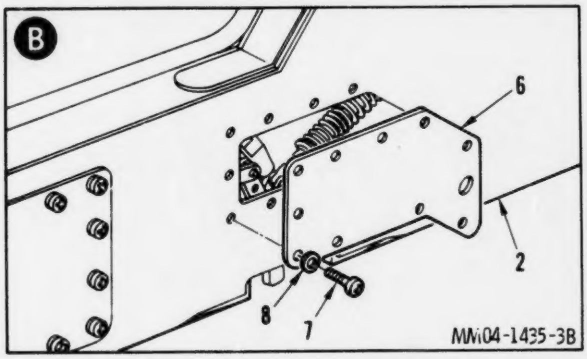
1. **Remove access cover (1) from door (2).**

   a. Remove nine screws (4) and washers (5).

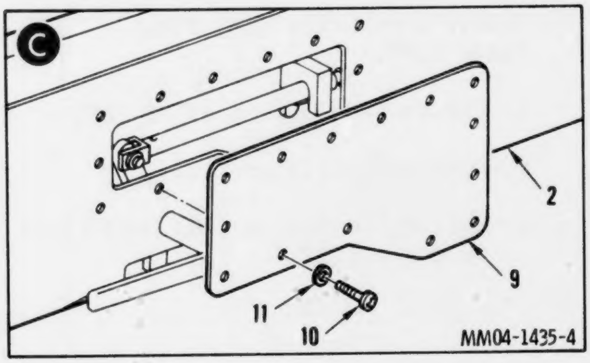
   b. Remove six countersunk screws (3).



2. **Remove access cover (6) from door (2).** Remove 10 screws (7) and washers (8).



3. **Remove access cover (9) from door (2).** Remove 14 screws (10) and 14 washers (11).



GO TO NEXT PAGE

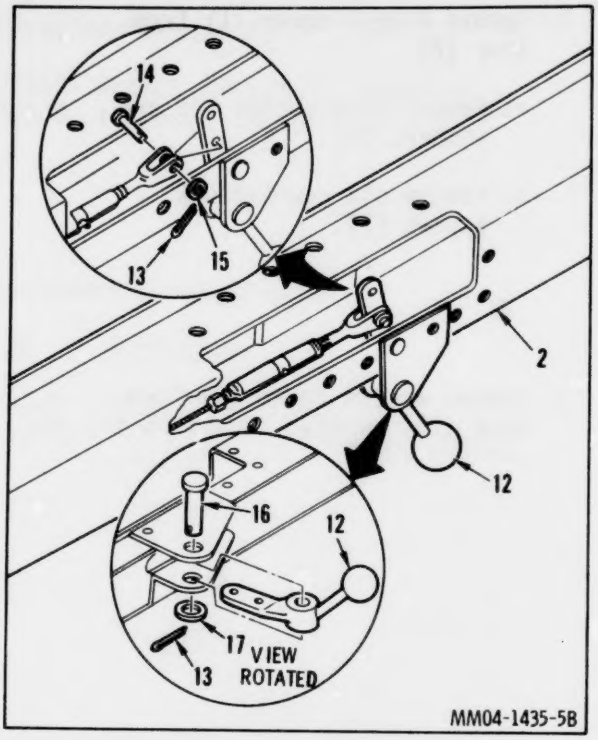
2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR (cont) 2-3-24

4. **Remove strut release lever (12) from door (2).**

   a. Remove and discard two cotter pins (13).

   b. Remove washer (15) and support pin (14).

   c. Remove washer (17), support pin (16), and lever (12).



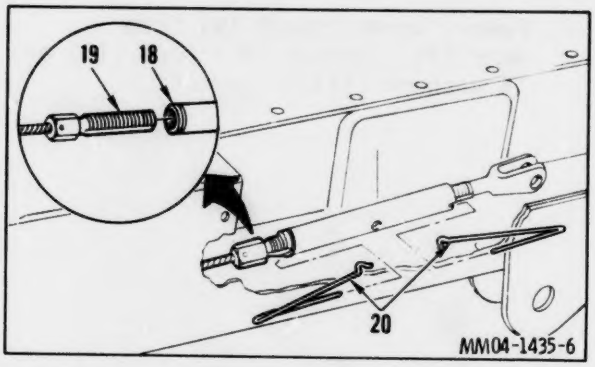
MM04-1435-5B

5. **Remove turnbuckle (18) from cable (19).**

   a. Remove two locking clips (20).

   b. Hold cable (19).

   c. Rotate turnbuckle (18) until free of cable (19).

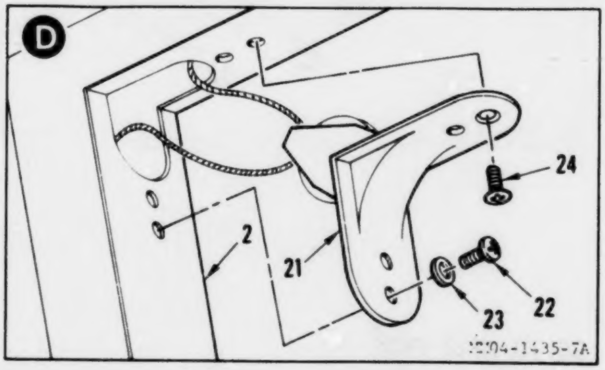


MM04-1435-6

6. **Remove bracket (21) from door (2).**

   a. Remove three screws (22) and washers (23).

   b. Remove flush screw (24).

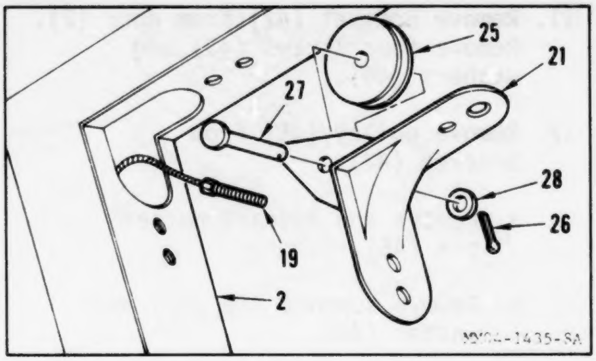


MM04-1435-7A

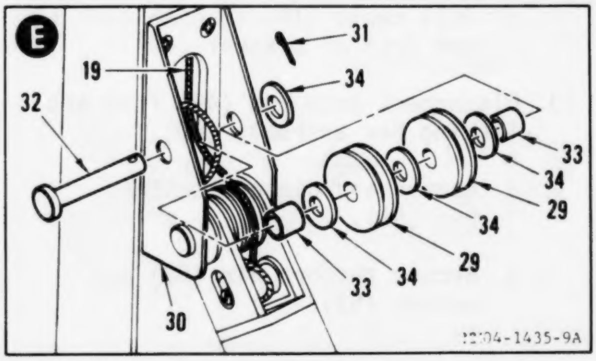
GO TO NEXT PAGE

2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR (cont) 2-3-24

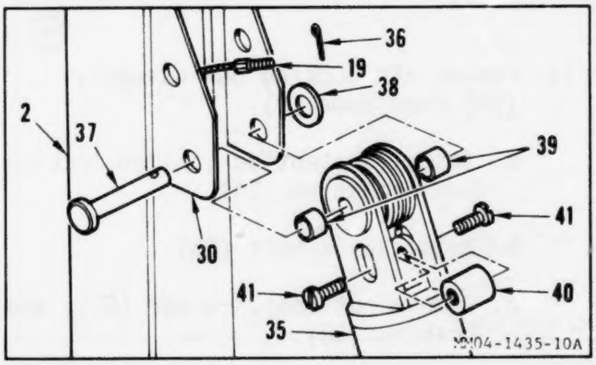
7. **Remove pulley (25) from bracket (21).**
   a. Remove and discard cotter pin (26).
   b. Remove support pin (27) and washer (28).
   c. Pull cable (19) through door (2) free of bracket (21).



8. **Remove two pulleys (29) from bracket (30).**
   a. Remove and discard cotter pin (31).
   b. Remove support pin (32), two pulleys (29), two bushings (33), and four washers (34) from cable (19) and bracket (30).



9. **Remove strut (35) from bracket (30).**
   a. Remove and discard cotter pin (36).
   b. Remove support pin (37), washer (38), and two bushings (39) from strut (35).

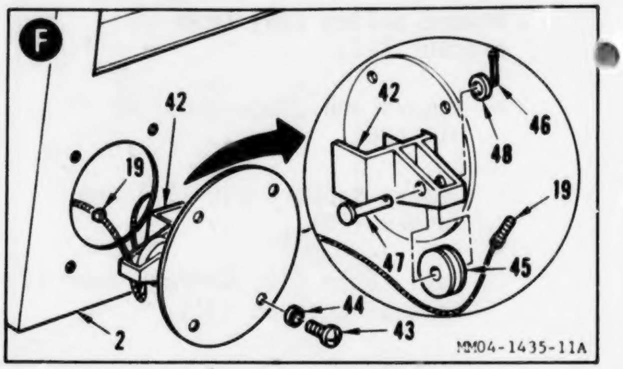


10. **Remove pulley spool (40) and cable (19) from strut (35).**
    a. Remove two screws (41) from spool (40).
    b. Remove spool (40) from strut (35) and cable (19).
    c. Pull cable (19) through door (2) and free of strut (35).

GO TO NEXT PAGE

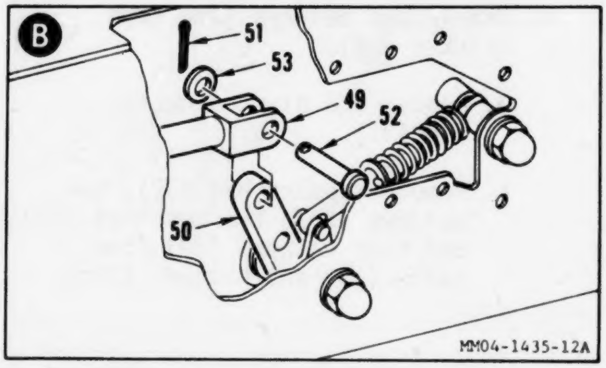
2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR (cont) 2-3-24

11. **Remove bracket (42) from door (2).** Remove four screws (43) and washers (44).

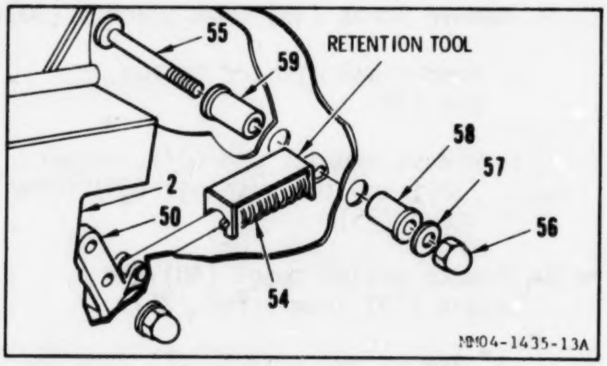


12. **Remove pulley (45) from bracket (42).**
    a. Remove and discard cotter pin (46).
    b. Remove support pin (47) and washer (48).
    c. Pull cable (19) through door (2) and free of bracket (42).

13. **Disconnect push rod (49) from aft locking bar assembly (50).**
    a. Remove and discard cotter pin (51).
    b. Remove support pin (52) and washer (53).



14. **Remove aft locking bar assembly (50) from door (2).**
    a. Install retention tool on locking bar mechanism (54).
    b. Hold clevis bolt (55).
    c. Remove nut (56), washer (57), and bushing (58).
    d. Remove bolt (55) and bushing (59).

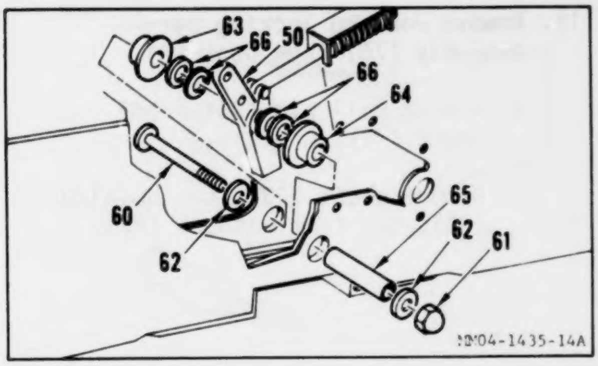


GO TO NEXT PAGE

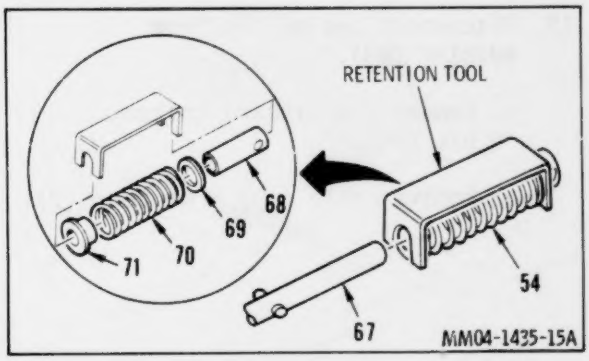
e. Hold bolt (60).

f. Remove nut (61).

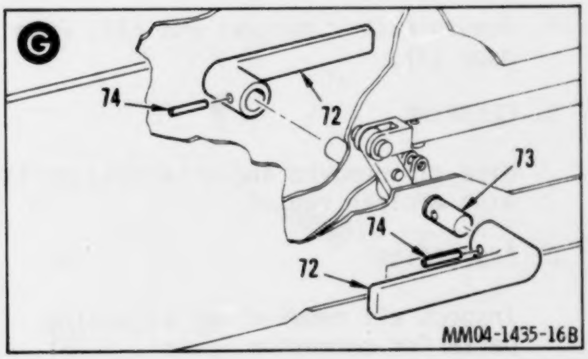
g. Remove bolt (60), two washers (62), three bushings (63, 64, 65), and four washers (66).



15. **Remove locking bar mechanism (54) from aft locking bar (67).** Use retention tool to slide retainer (68), washer (69), spring (70), and keeper (71) free of bar (67).



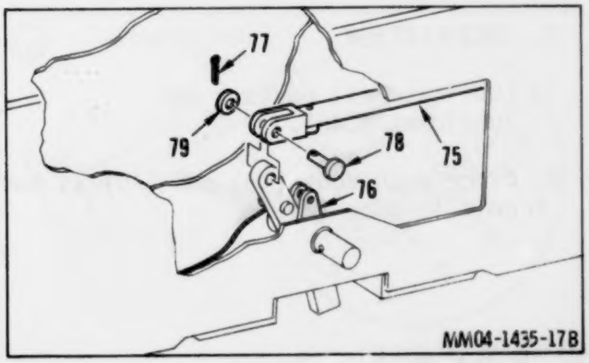
16. **Remove two door handles (72, 73) from shaft (73).** Remove and discard two roll pins (74).



17. **Disconnect push rod (75) from forward locking bar (78).**

a. Remove and discard cotter pin (79).

b. Remove support pin (80) and washer (81).



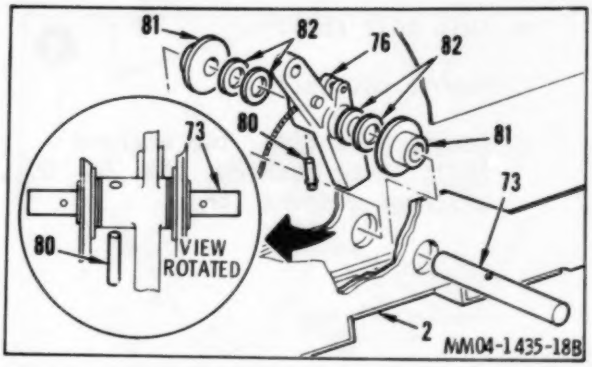
GO TO NEXT PAGE

2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR (cont) 2-3-24

18. **Remove forward locking bar assembly (76) from door (2).**

    a. Remove roll pin (80) from shaft (74).

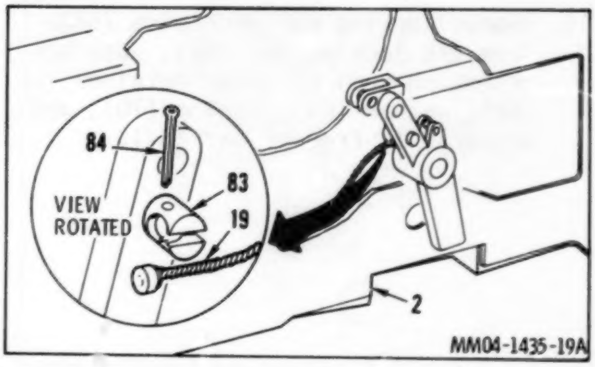
    b. Remove shaft (73), two bushings (81), and four washers (82).



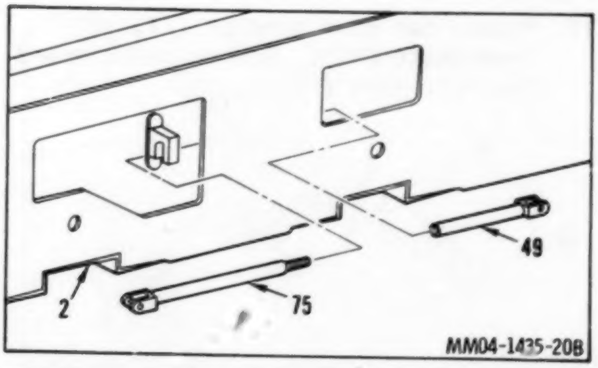
19. **Disconnect cable (19) from adapter (83).**

    a. Remove and discard cotter pin (84).

    b. Remove cable (19) from door (2).



20. **Remove push rods (49) and (77) from door (2).**



B. **CLEANING**

Wipe all removed and attaching parts with a clean rag.

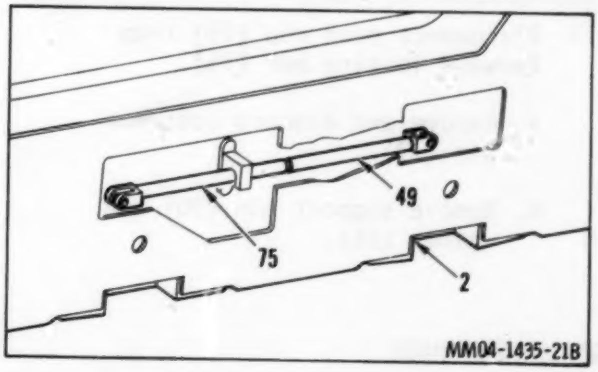
C. **INSPECTION**

Inspect all removed and attaching parts for corrosion (para 1-5-38).

D. **INSTALLATION**

1. **Lubricate all parts. Use lubricant (E48).**

2. **Place push rods (49) and (75) as one unit in door (2).**



GO TO NEXT PAGE

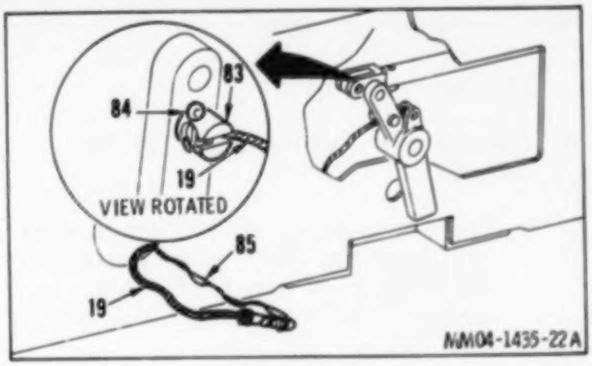
2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR (cont) 2-3-24

3. **Connect cable (19) to adapter (83).**

   a. Install new cotter pin (84).

   b. Connect lockwire (88) to loose end of cable (19). Use lockwire (E49).

   c. Use lockwire (85) to aid installation of cable (19). Use lockwire (E49).

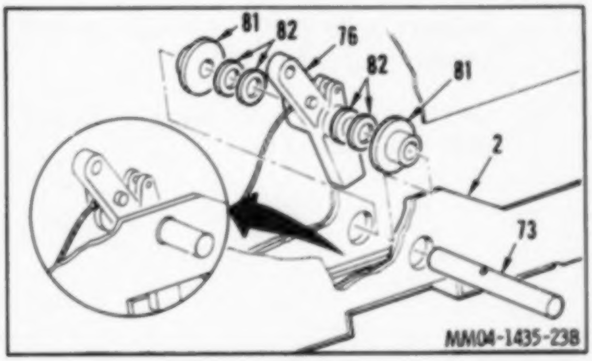


4. **Install forward locking bar (76) in door (2).**

NOTE

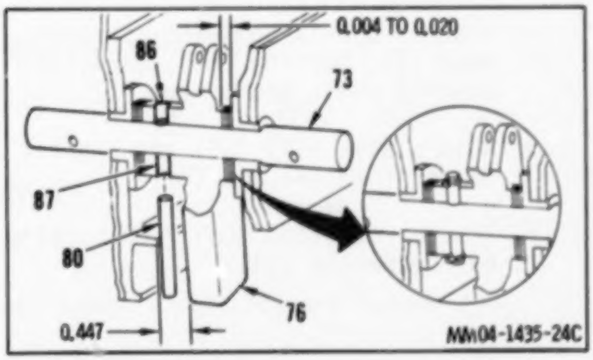
Install required amount of washers to achieve a **0.447-INCH** gap and **0.004 TO 0.020-INCH** gap.

   a. Install shaft (73) through door (2), bushing (81), required washers (82), locking bar (76), required washers (82), bushing (81), and door (2).

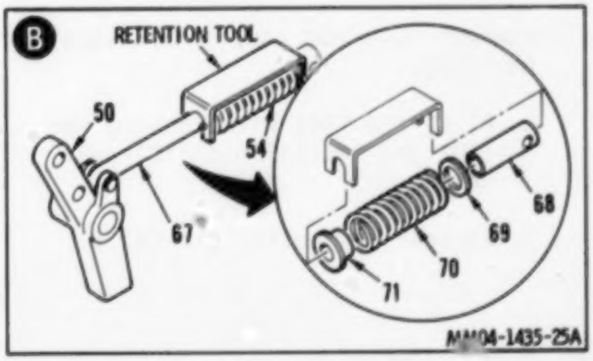


   b. Aline hole (86) in shaft (73) with hole (87) in locking bar (76).

   c. Install pin (80) through alined holes (86) and (87).



5. **Install locking bar (54) on aft locking bar (50).** Use retention tool to stack and hold keeper (71), spring (70), washer (69), and retainer (68) on bar (67).



GO TO NEXT PAGE

2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR (cont) 2-3-24

NOTE

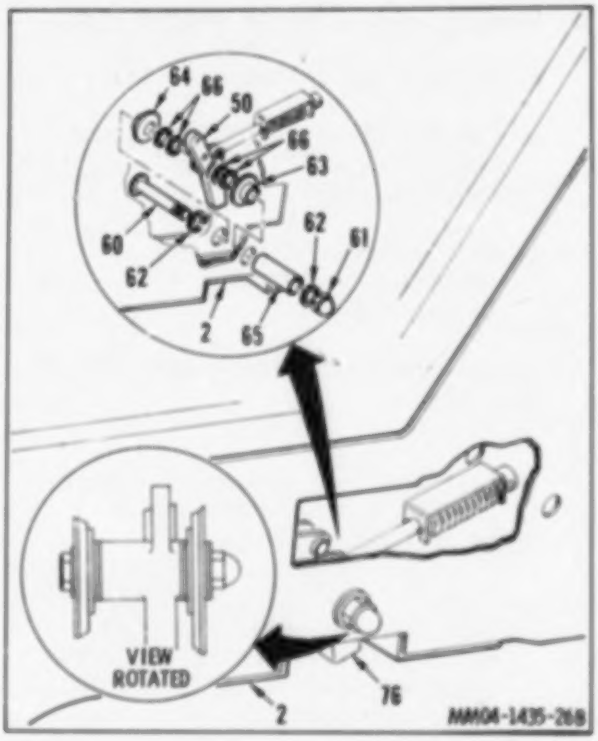
Shim as required.

6. **Install aft locking bar (76) in door (2).**

   a. Install bushing (65) through door (2), bushing (63), shim washers (66), locking bar (50), shim washers (66), bushing (64), and door (2).

   b. Install bolt (60) with washer (62) through bushing (65).

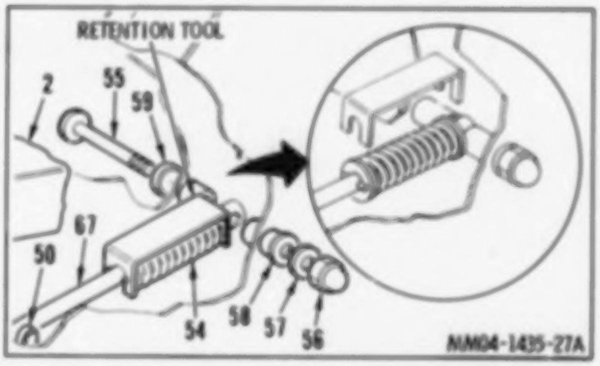
   c. Hold bolt (60) and install washer (62) and nut (61).



   d. Install clevis bolt (55) through door (2), bushing (59), bar (67), bushing (58), and washer (57).

   e. Hold clevis bolt (55) and install washer (57) and nut (56).

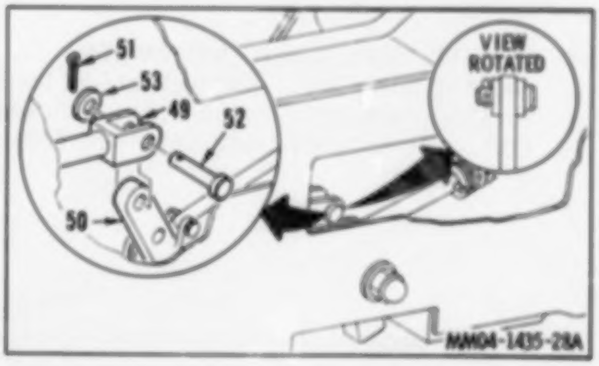
   f. Remove retention tool from locking bar mechanism (54).



7. **Connect push rod (49) to aft locking bar (50).**

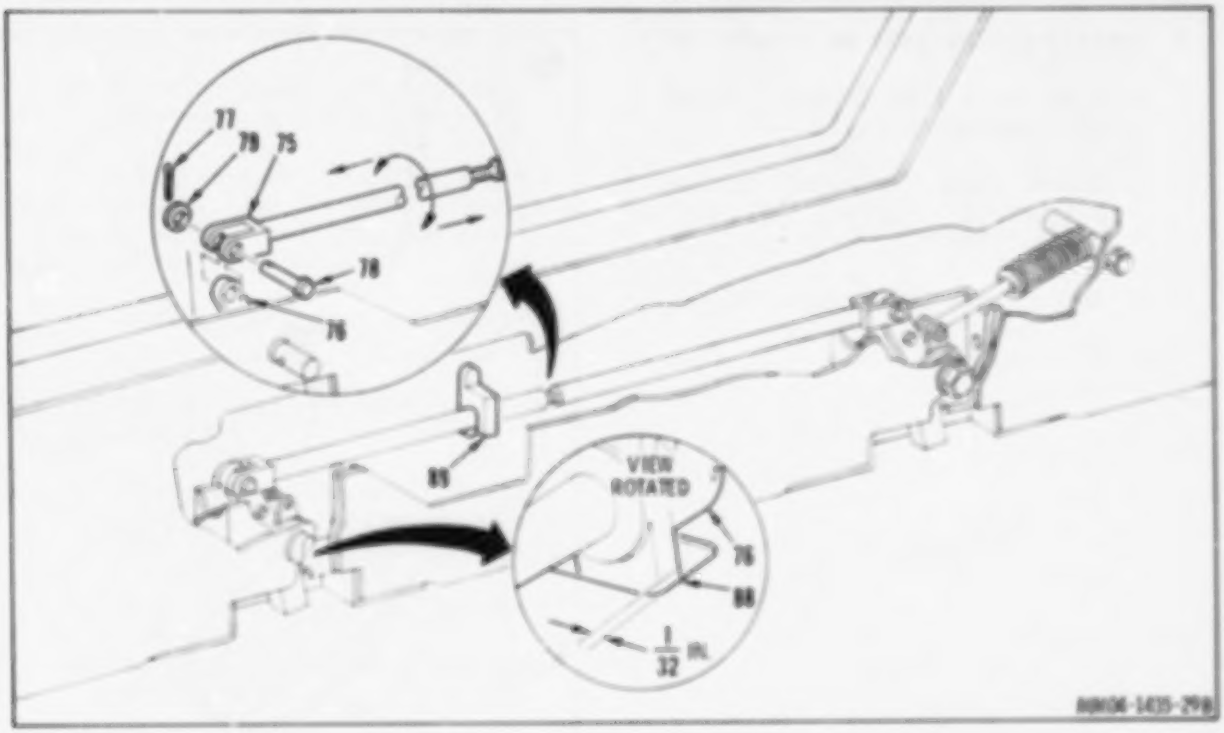
   a. Aline rod (49) with locking bar (50) and install pin (52) and washer (53).

   b. Install new cotter pin (51).



GO TO NEXT PAGE

2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR (cont) 2-3-24



8. **Connect push rod (75) to forward locking bar assembly (76).**

   a. Adjust rod (75) so that bar (76) is 1/32 inch from stop (88). Use thickness gage.

   b. Turn rod (75) counterclockwise to lengthen.

   c. Aline rod (75) in guide (91).

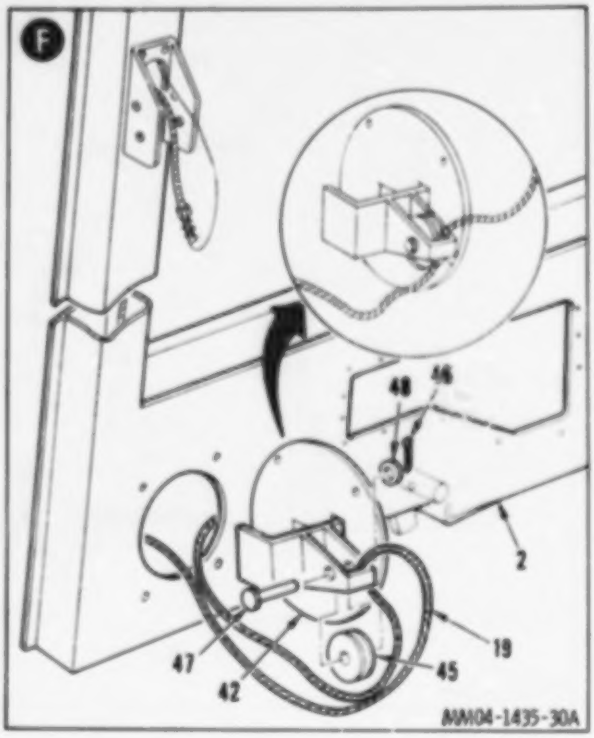
   d. Aline rod (75) with bar (76) and install support pin (78) and washer (79).

   e. Install new cotter pin (77).

GO TO NEXT PAGE

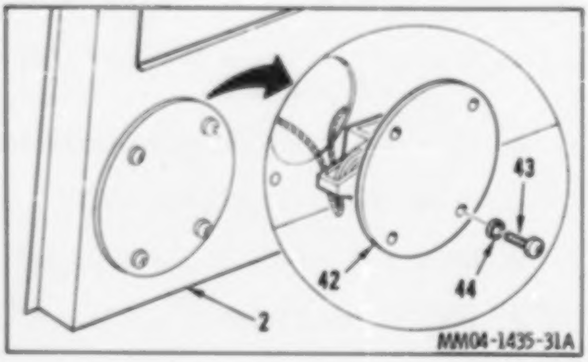
2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR (cont) 2-3-24

9. **Install pulley (45) on bracket (42).**
   a. Feed cable (19) through bracket (42) and door (2).
   b. Insert support pin (47) through bracket (42), pulley (45), and washer (48).
   c. Install new cotter pin (46).



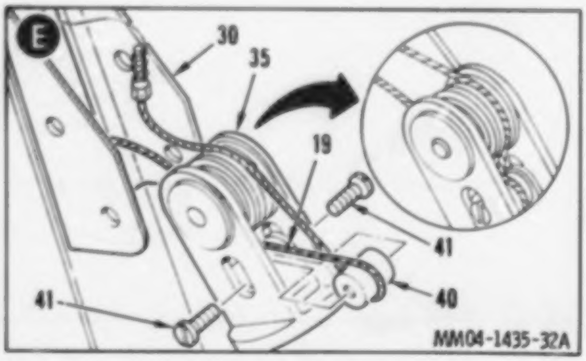
MM04-1435-30A

10. **Install bracket (42) on door (2).**
    a. Position bracket (42) on door (2).
    b. Install four washers (44) and screws (43).



MM04-1435-31A

11. **Install cable (19) and pulley spool (40) on strut (35).**
    a. Feed cable (19) in strut (35).
    b. Aline spool (40) in strut (35).
    c. Install two screws (41) through strut (35) and spool (40).



MM04-1435-32A

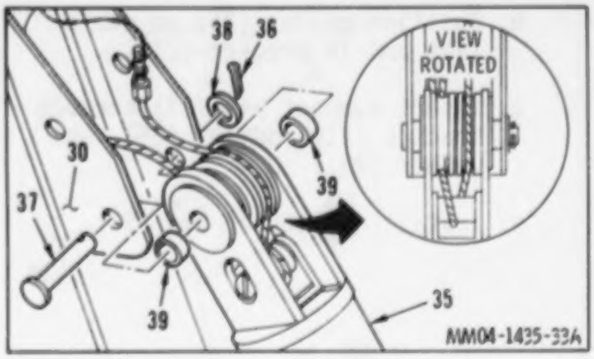
GO TO NEXT PAGE

12. **Install strut (35) on bracket (30).**

    a. Position strut (35) and two bushings (39) in bracket (30).

    b. Insert support pin (37) through bracket (30), bushing (39), strut (35), bushing (39), bracket (30), and washer (38).

    c. Install new cotter pin (36).



13. **Install two pulleys (29) on bracket (30).**

    a. Stack two pulleys (29), three washers (34), and two bushings (33). Use 3/16 by 15/16 dowel.

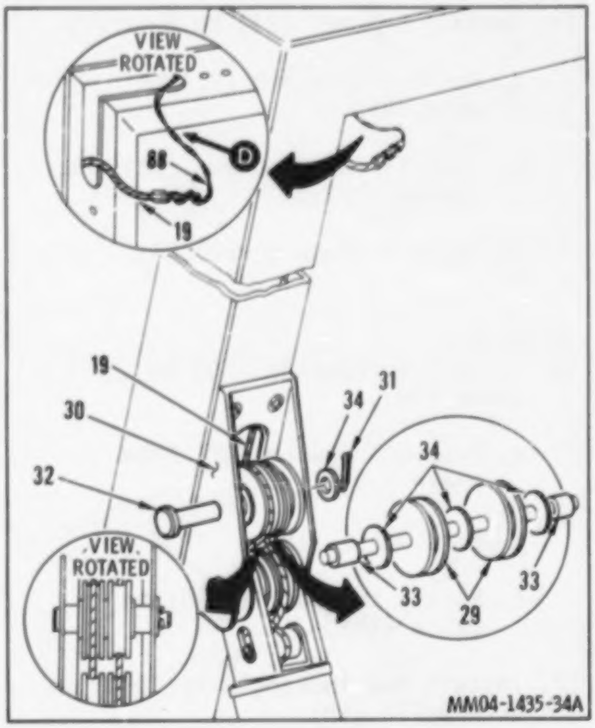
    b. Feed cable (19) to pulley area.

    c. Position cable (19) around two pulleys (29).

    d. Position two pulleys (29), three washers (34), and two bushings (33) in bracket (30).

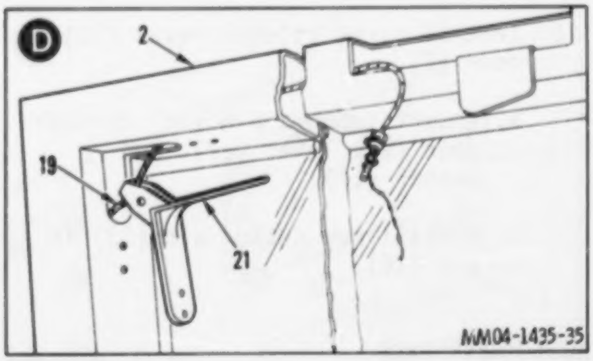
    e. Insert support pin (32) through bracket (30), bushings (33), four washers (34), and pulleys (29).

    f. Install new cotter pin (31).



14. **Install pulley (25) on bracket (21).**

    a. Feed cable (19) through bracket (21) and door (2).



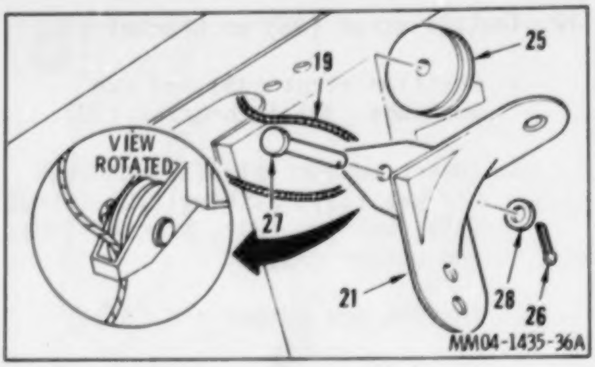
GO TO NEXT PAGE

2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR (cont) 2-3-24

b. Position pulley (25) on cable (19) and in bracket (21).

c. Insert support pin (27) through bracket (21), pulley (25), and washer (28).

d. Install new cotter pin (26).

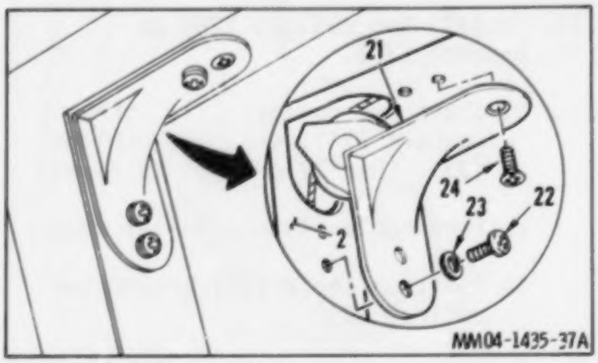


15. Install bracket (21) on door (2).

a. Position bracket (21) on door (2).

b. Install three screws (22) and washers (23).

c. Install flush screw (24).



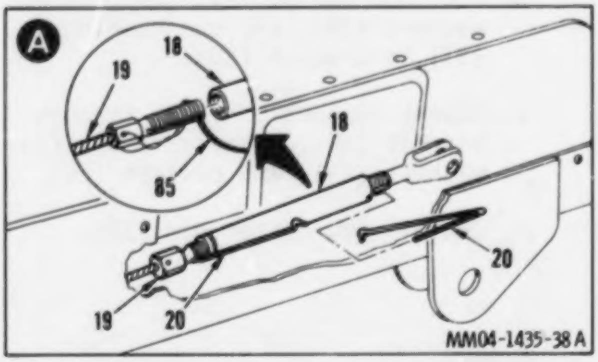
16. Install turnbuckle (18) on cable (19).

a. Remove lockwire (88) from cable (19).

b. Hold cable (19).

c. Rotate turnbuckle (18) on cable (19).

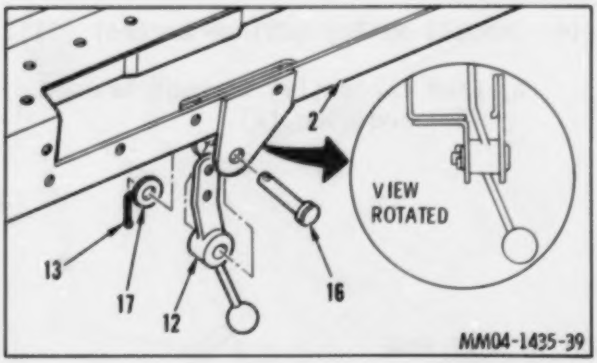
17. Install two locking clips (20) on turnbuckle (18).



18. Install strut release lever (12) on door (2).

a. Insert support pin (16) through door (2), lever (12), and washer (17).

b. Install new cotter pin (13) in pin (16).

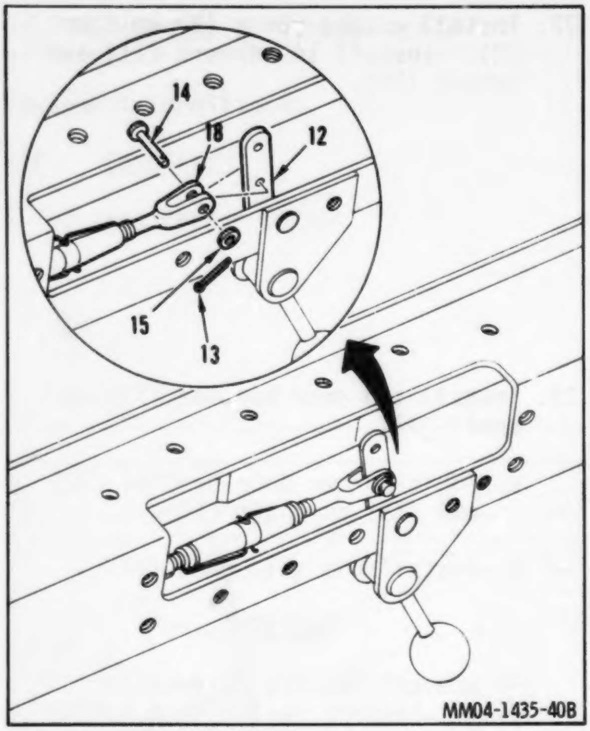


GO TO NEXT PAGE

2-3-24. PILOT STATION ACCESS DOOR MECHANISM REPAIR (cont) 2-3-24

  c. Insert support pin (14) through turnbuckle (18), lever (12), and washer (15).

  d. Install new cotter pin (13) in support pin (14).

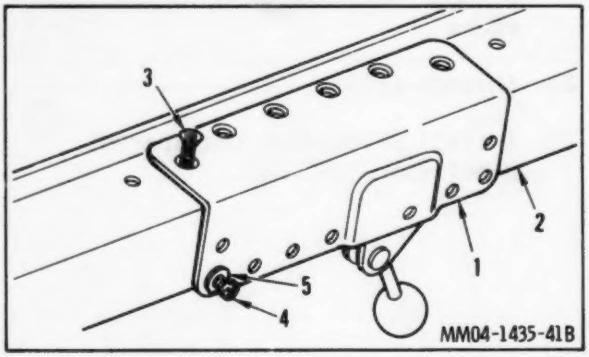


19. **Adjust door lock** (para 2-3-23).

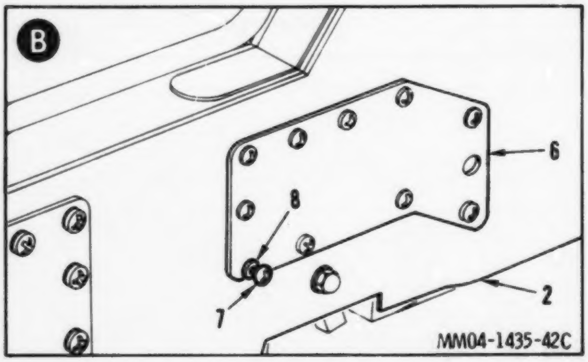
20. **Install cover (1) on door (2).**

  a. Install six countersunk screws (3).

  b. Install nine washers (5) and screws (4).

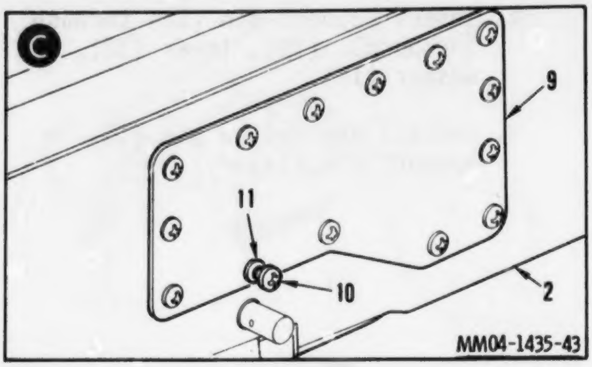


21. **Install access cover (6) on door (2).** Install 10 washers (8) and screws (7).



GO TO NEXT PAGE

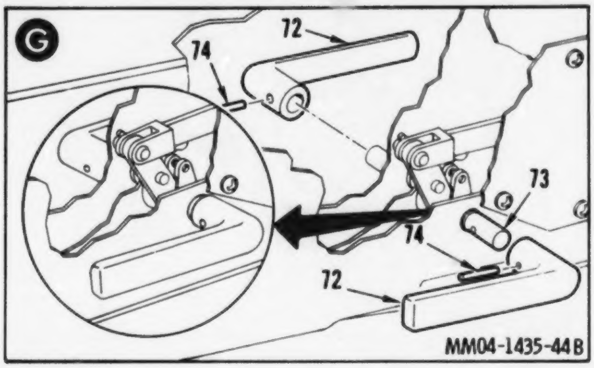
22. **Install access cover (9) on door (2). Install 14 washers (11) and** screws (10).



23. **Install two door handles (72) on shaft (73).**

    a. Position two door handles (72) and (73) on shaft (73).

    b. Install two roll pins (74).



CAUTION

To prevent opening of door in flight, ensure spring-back motion of door handle with pilot/CPG door open.

24. **Inspect (TI).**

25. **Install pilot door transparent panel** (para 2-3-38).

END OF TASK

2-3-25. PILOT ACCESS DOOR STRUT PULLEY REMOVAL/INSTALLATION 2-3-25

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

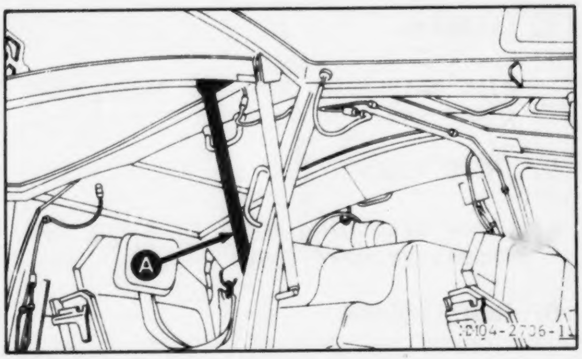
Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

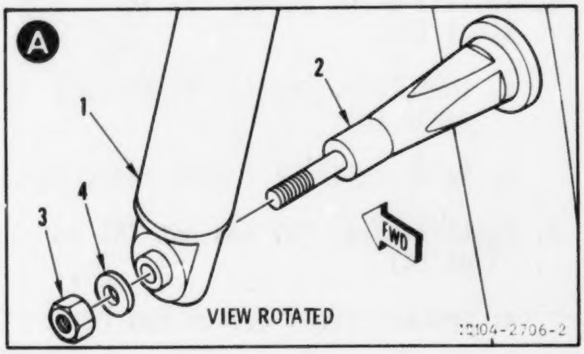
2. Prop pilot access door open.



3. Remove access door strut (1) from anchor rod (2).

   a. Remove nut (3) and washer (4) from rod (2).

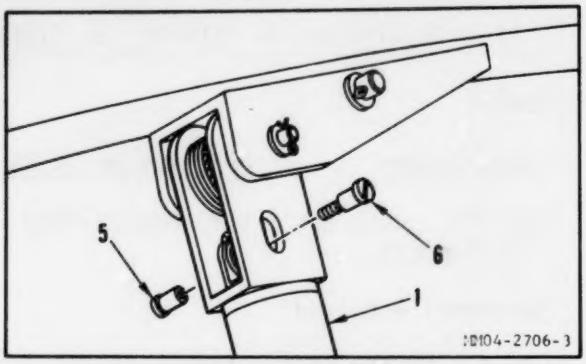
   b. Remove strut (1) from rod (2).



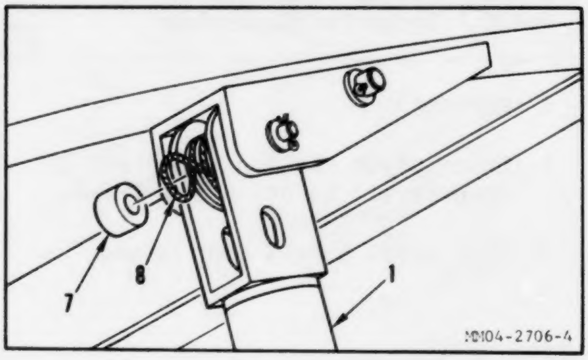
GO TO NEXT PAGE

2-3-25. PILOT ACCESS DOOR STRUT PULLEY REMOVAL/INSTALLATION (cont) 2-3-25

4. **Remove nut (5) and screw (6) from strut (1).**



5. **Swing out strut pulley (7) and remove from twisted cable (8).**



B. **CLEANING**

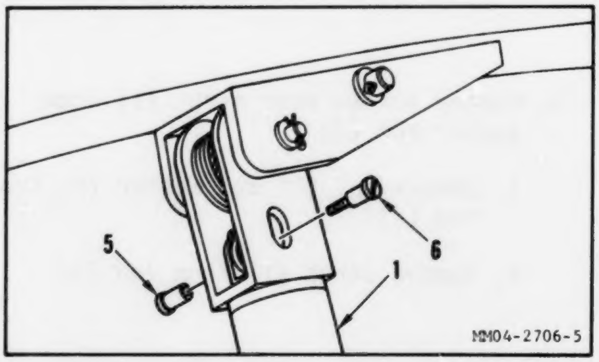
Wipe attaching areas of strut with a clean rag.

C. **INSPECTION**

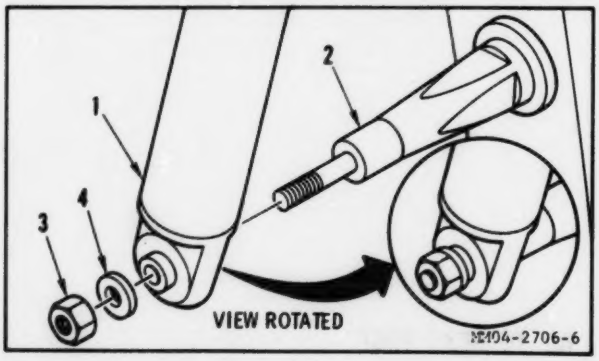
Check attaching areas of strut for excessive wear (para 2-3-1).

D. **INSTALLATION**

1. **Install strut pulley (7) in strut (1).**
   a. Install pulley (7) in twisted cable (8).
   b. Swing pulley (7) into strut (1).



2. **Install screw (6) and nut (5) in strut (1).**
   a. Install strut (1) on rod (2).
   b. Install washer (4) and nut (3) on rod (2).
3. **Remove prop from access door.**
4. **Inspect (TI).**



END OF TASK

2-3-26. CPG ACCESS DOOR STRUT PULLEY REMOVAL/INSTALLATION 2-3-26

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Equipment Conditions:

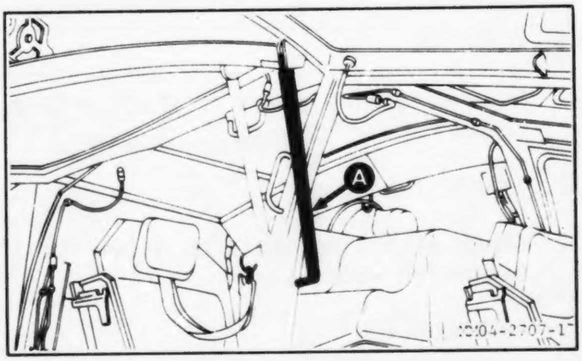
Ref	Condition
1-7-2	Helicopter safed

Personnel Required:

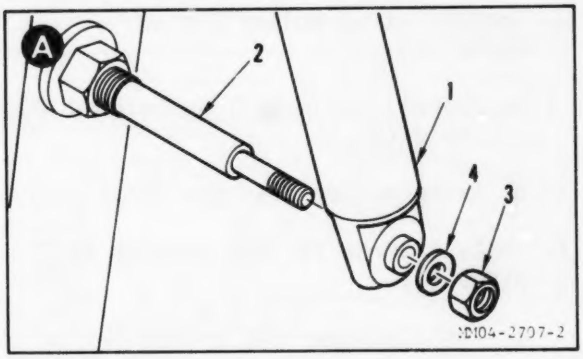
67R10 Attack Helicopter Repairer

A. REMOVAL

1. **Enter CPG station** (para 1-7-1). **Observe all safety precautions.**
2. **Prop CPG access door open.**



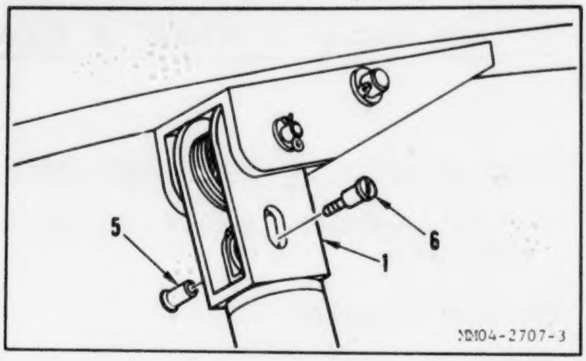
3. **Remove access door strut (1) from anchor rod (2).**
   - a. Remove nut (3) and washer (4) from rod (2).
   - b. Remove strut (1) from rod (2).



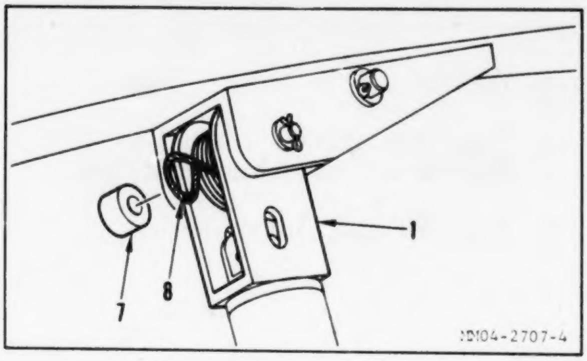
GO TO NEXT PAGE

2-3-26. PILOT ACCESS DOOR STRUT PULLEY REMOVAL/INSTALLATION (cont) 2-3-26

4. **Remove nut (5) and screw (6) from strut (1).**



5. **Swing out strut pulley (7) and remove from twisted cable (8).**



B. **CLEANING**

Wipe attaching areas of strut with a clean rag.

C. **INSPECTION**

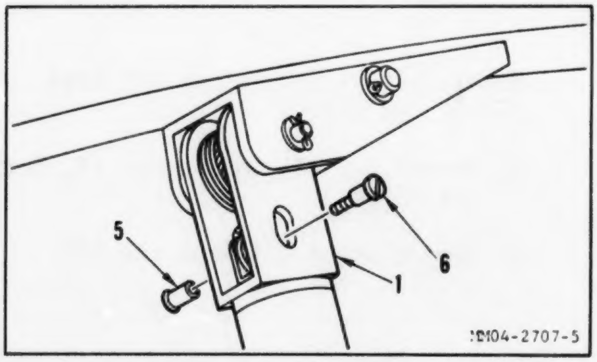
Check attaching areas of strut for excessive wear.

D. **INSTALLATION**

1. **Install strut pulley (7) in strut (1).**

   a. Install pulley (7) in twisted cable (8).

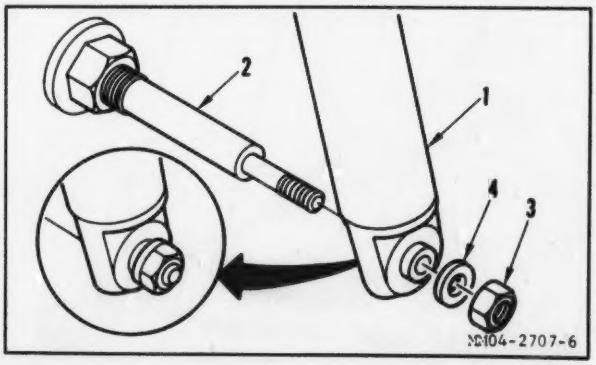
   b. Swing pulley (7) into strut (1).



2. **Install screw (6) and nut (5) in strut (1).**

   a. Install strut (1) on rod (2).

   b. Install washer (4) and nut (3) on rod (2).



3. **Remove prop from access door.**

END OF TASK

2-3-27. PILOT STATION ACCESS DOOR LOWER HINGE HALF REMOVAL/INSTALLATION 2-3-27

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

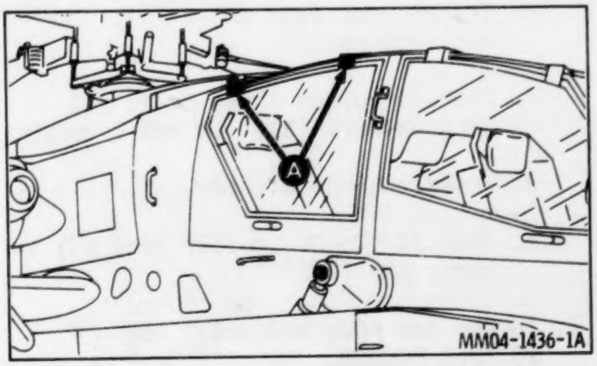
Cotter Pin (2)

Personnel Required:

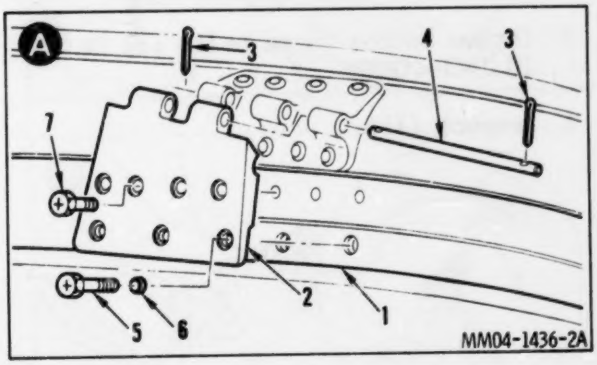
67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



MM04-1436-1A



MM04-1436-2A

A. REMOVAL

1. Close and latch pilot station access door (1).
2. Remove lower hinge half (2) from pilot station access door (1).
    a. Remove and discard two cotter pins (3) from hinge pin (4).
    b. Remove hinge pin (4).
    c. Remove three lower bolts (5) and washers (6).
    d. Remove four upper bolts (7).

GO TO NEXT PAGE

2-3-27. PILOT STATION ACCESS DOOR LOWER HINGE HALF REMOVAL/ INSTALLATION (cont) 2-3-27

B. CLEANING

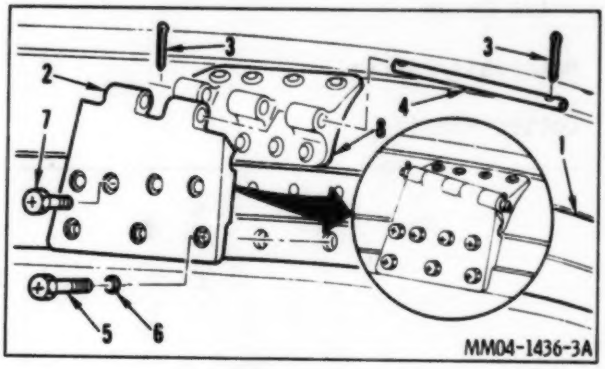
Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

Check hinge half for excessive wear. None allowed.

D. INSTALLATION

1. **Install lower hinge half (2) on pilot station access door (1).**
   a. Aline hinge halves (2) and (8).
   b. Install top four bolts (7). Do not tighten.
   c. Install bottom three bolts (5) with washers (6). Do not tighten.
   d. Install hinge pin (4).
   e. Install two new cotter pins (3) in hinge pin (4).
2. **Torque top four bolts (7) to 20 INCH-POUNDS.**
3. **Torque bottom three bolts (5) to 10 INCH-POUNDS.**
4. **Inspect (TI).**



END OF TASK

2-3-28. CPG STATION ACCESS DOOR REMOVAL/INSTALLATION 2-3-28

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Materials/Parts:

	Cotter Pin (2)
	Packing
(E15)	Lockwire
(E16)	Petrolatum
(E41)	Tape, Duct

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to support door
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. **Enter CPG station** (para 1-7-1). **Observe all safety precautions.**

CAUTION

Remove detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

2. **Remove detonating cord (1) from severance assembly (2).**

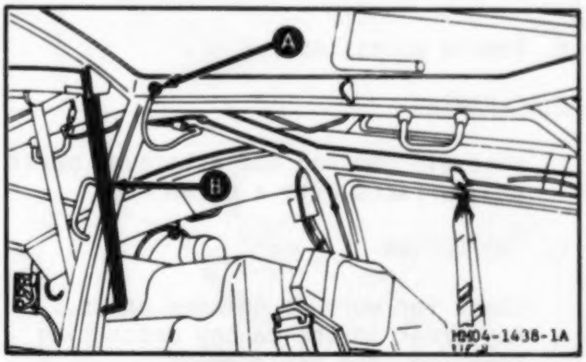
   a. Remove lockwire.

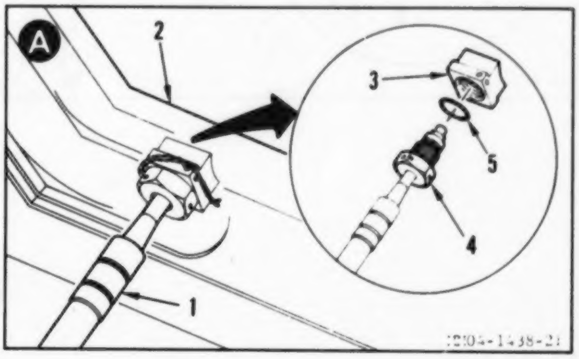
   b. Hold initiation block (3).

   c. Remove fitting (4).

   d. Remove and discard packing (5).

   e. Cover initiation block (3) and detonating cord (1).





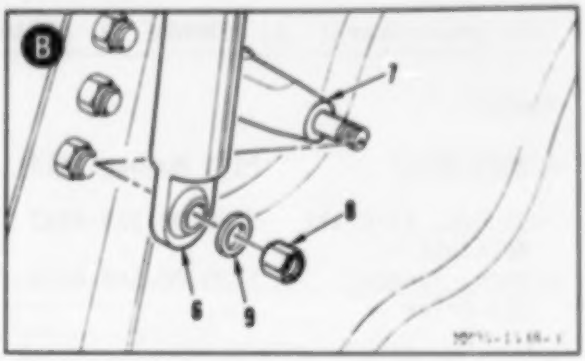
GO TO NEXT PAGE

CAUTION

One person must support access door during removal.

3. **Position one person to support access door (14) during removal.**

4. **Remove door strut lower end (6) from anchor (7).** Remove nut (8) and washer (9). Secure strut to door with duct tape (E41).



5. **Separate hinge halves (10) and (11).**

   a. Remove and discard two cotter pins (12).

   b. Remove two hinge pins (13).

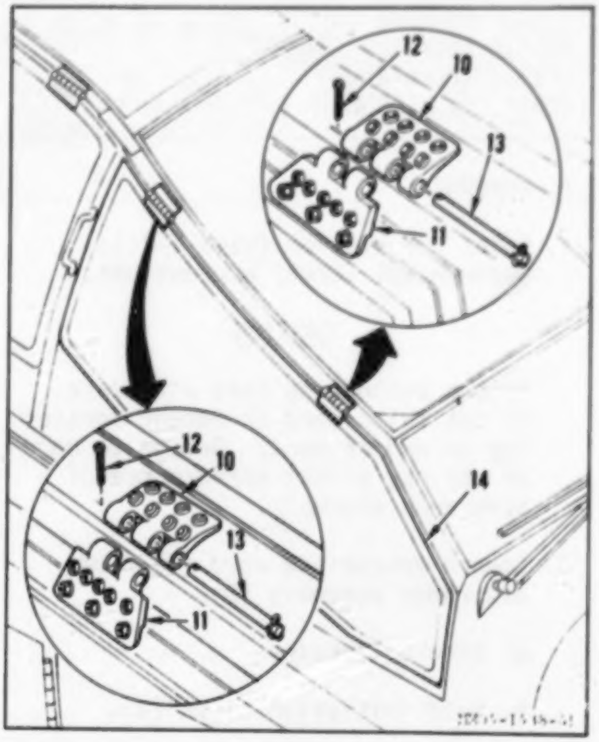
6. **Remove access door (14).**

B. **CLEANING**

Wipe all removed and attaching parts and surfaces with a clean rag.

C. **INSPECTION**

Check for worn or damaged parts. Any break in the canopy detonating cord requires replacement.



GO TO NEXT PAGE

2-3-28. CPG STATION ACCESS DOOR REMOVAL/INSTALLATION (cont) 2-3-28

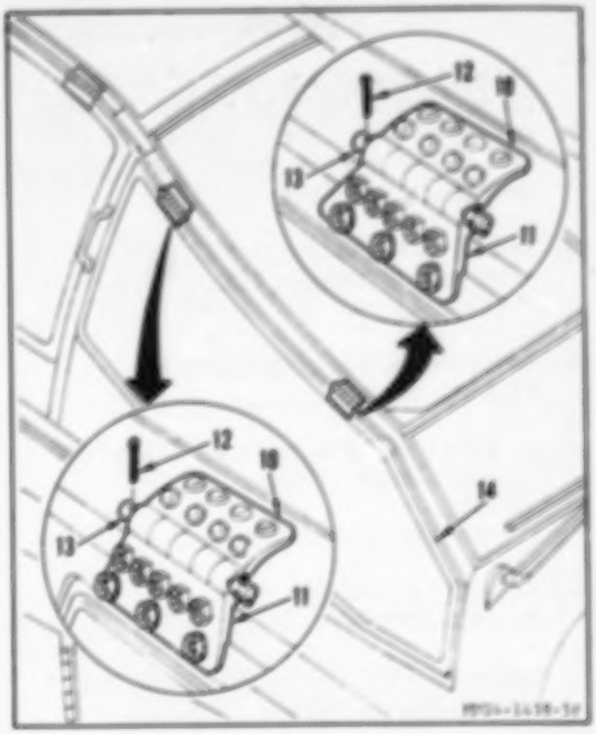
D. INSTALLATION

1. One person aline and support access door (14) during installation.

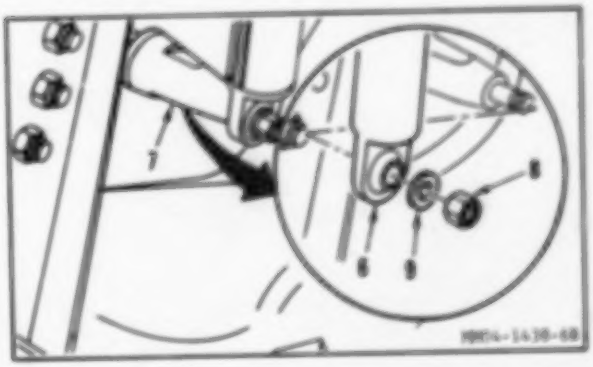
2. Install hinge halves (10) and (11).

    a. Install hinge pin (13) in each hinge half (10) and (11).

    b. Install two cotter pins (12) in hinge pin (13).

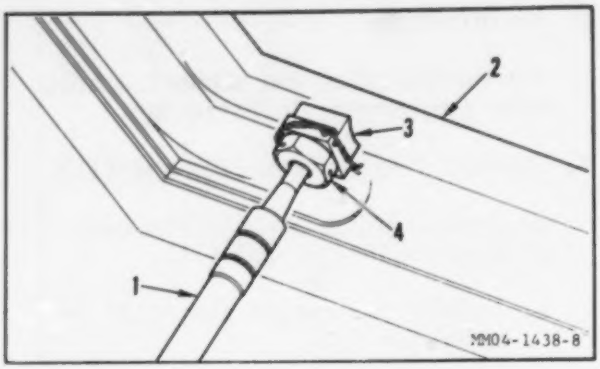


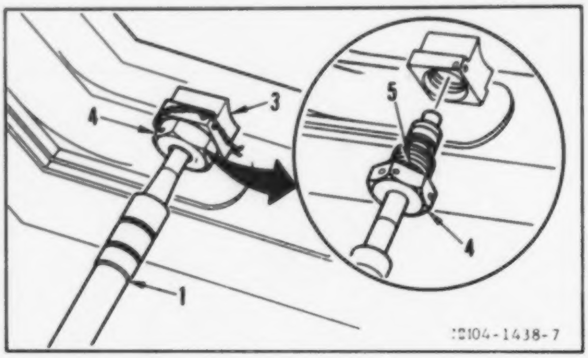
3. Install door strut lower end (6) on anchor (7). Install washer (9) and nut (8).



GO TO NEXT PAGE

2-3-28. CPG STATION ACCESS DOOR REMOVAL/INSTALLATION (cont) 2-3-28





CAUTION

Install detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

4. **Install detonating cord (1) on severance assembly (2).** Install fitting (4) on initiation block (3).
5. **Install new packing (5) on fitting (4).**
   a. Lubricate new packing (5) with petrolatum (E16).
   b. Install new packing (5).
6. **Torque fitting (4) to 80 INCH-POUNDS.** Hold block (3).
7. **Lockwire fitting (4) to block (3) with lockwire (E15).**
8. **Inspect (TI).**

END OF TASK

2-3-29. CPG STATION ACCESS DOOR ADJUSTMENT 2-3-29

Tools:

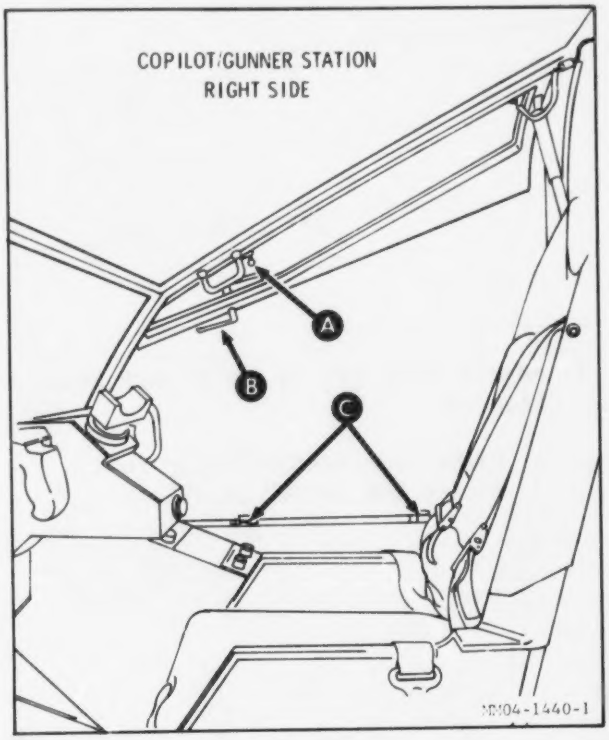
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



GO TO NEXT PAGE

2-3-29. CPG STATION ACCESS DOOR ADJUSTMENT (cont) 2-3-29

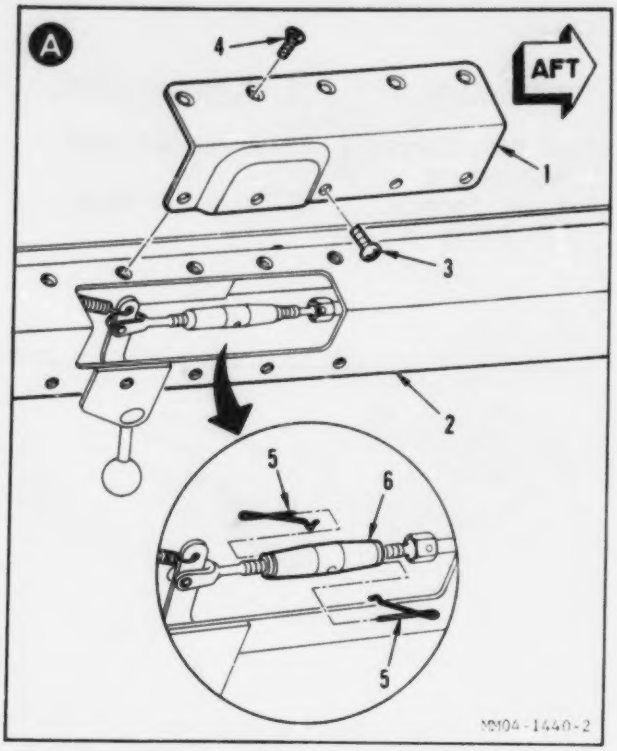
1. **Enter CPG station (para 1-7-1). Observe all safety precautions.**

2. **Remove access cover (1) from door (2).**

   a. Remove five screws (3).

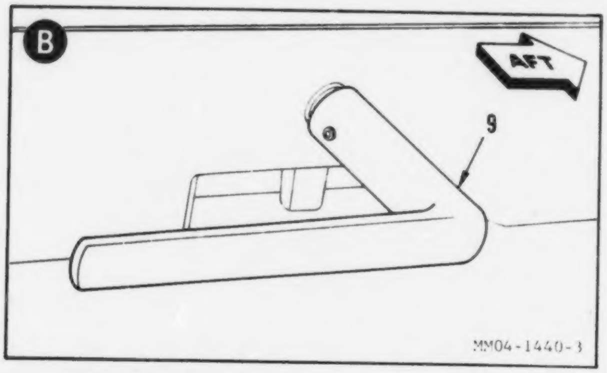
   b. Remove five countersunk screws (4).

3. **Remove two locking clips (5) from turnbuckle (6).**



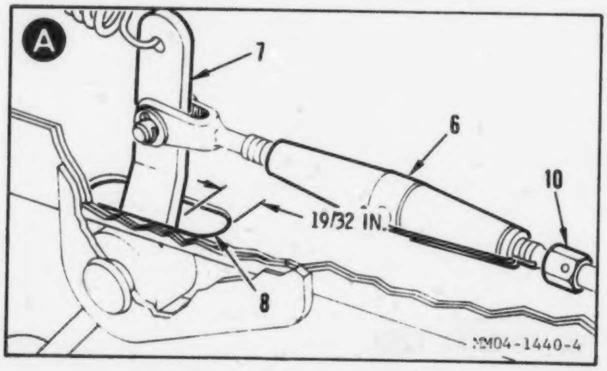
4. **Adjust lever (7) to 19/32 inch from stop (8).**

   a. Place door handle (9) in full closed and locked position.



   b. Hold cable assembly (10).

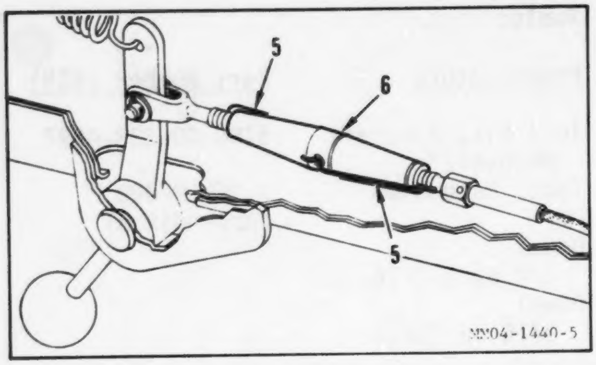
   c. Rotate turnbuckle (6) until lever (7) is **19/32 INCH** from stop (8). Use machinist rule to measure.



GO TO NEXT PAGE

2-3-29. CPG STATION ACCESS DOOR ADJUSTMENT (cont) 2-3-29

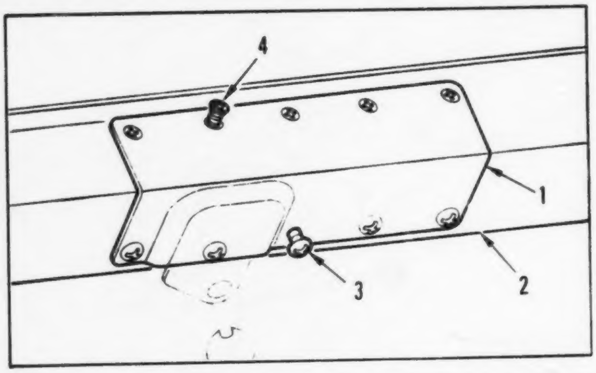
5. Install two locking clips (5) in turnbuckle (6).



6. Install access cover (1) on door (2).

   a. Install five screws (3).

   b. Install five countersunk screws (4).



7. Adjust two door latch striker plates (11).

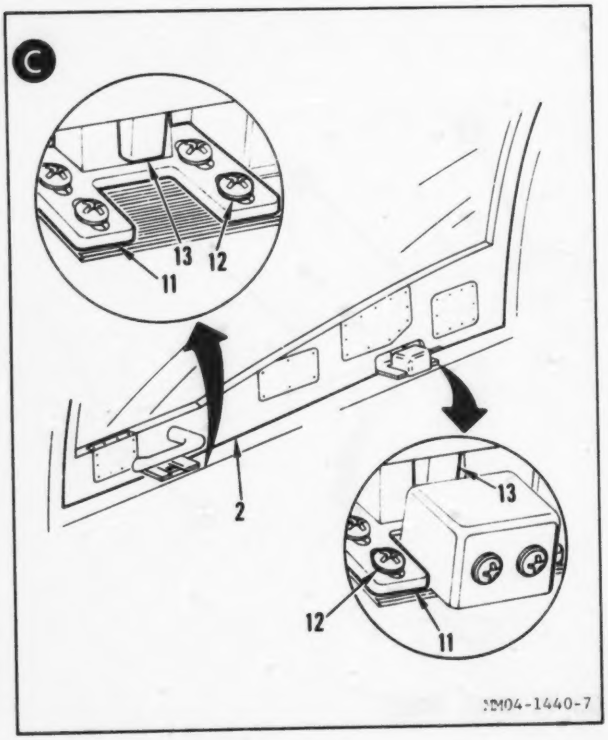
   a. Loosen eight screws (12) on plates (11).

   b. Hold door (2) in closed position.

   c. Position two plates (11) against door locking bars (13).

8. Torque eight screws (12) to 20 INCH-POUNDS.

9. Inspect (TI).



END OF TASK

2-3-30. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) 2-3-30

Tools:

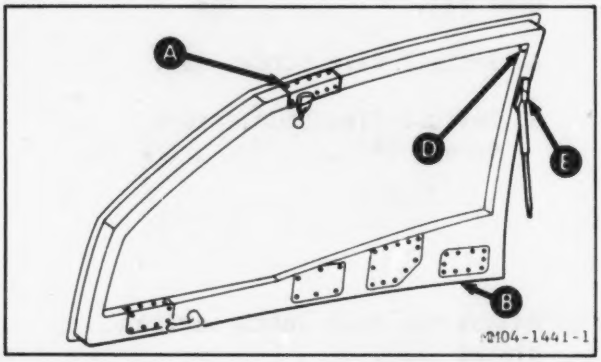
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Tool, Retention	7-3621MF003 (Appendix D)
Dowel 1/4 by 1-7/16	
Dowel 3/16 by 15/16	

Materials/Parts:

	Cotter Pin (10)
(E48)	Lubricant
(E49)	Lockwire

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor



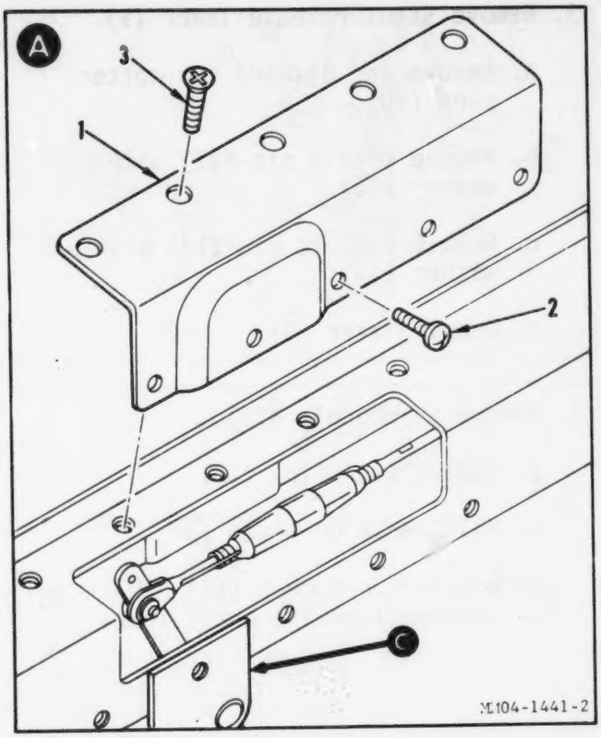
GO TO NEXT PAGE

2-3-30. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) (cont) 2-3-30

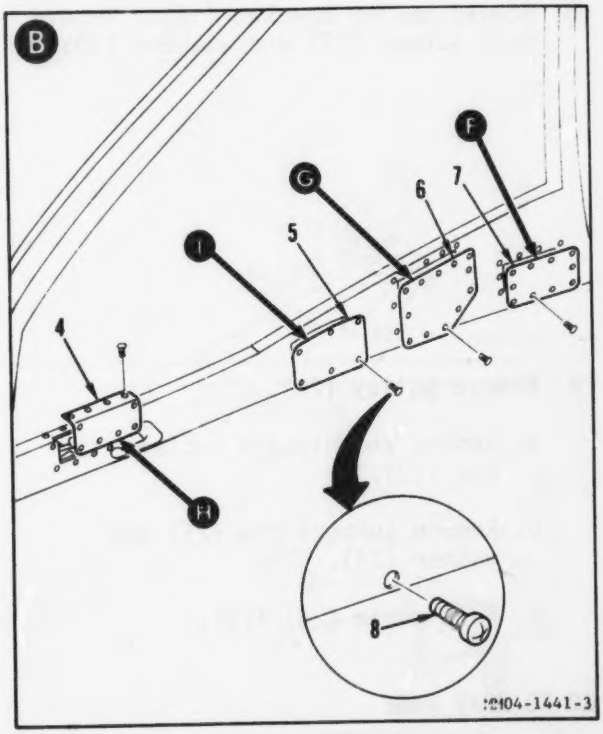
1. **Remove top access cover (1).**

   a. Remove five screws (2).

   b. Remove five countersunk screws (3).



2. **Remove four bottom access covers (4), (5), (6), and (7).** Remove 38 screws (8).



GO TO NEXT PAGE

2-3-30. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) (cont) 2-3-30

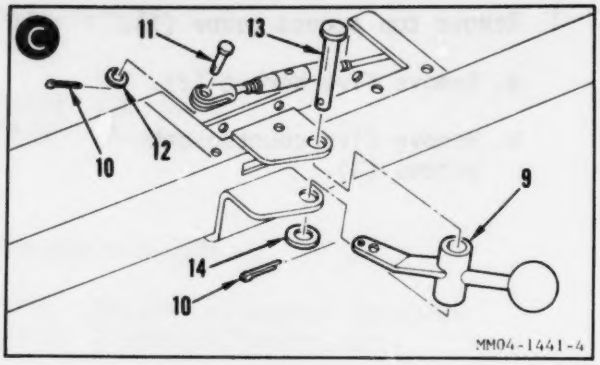
3. **Remove strut release lever (9).**

   a. Remove and discard two cotter pins (10).

   b. Remove clevis pin (11) with washer (12).

   c. Remove support pin (13) with washer (14).

   d. Remove lever (9).

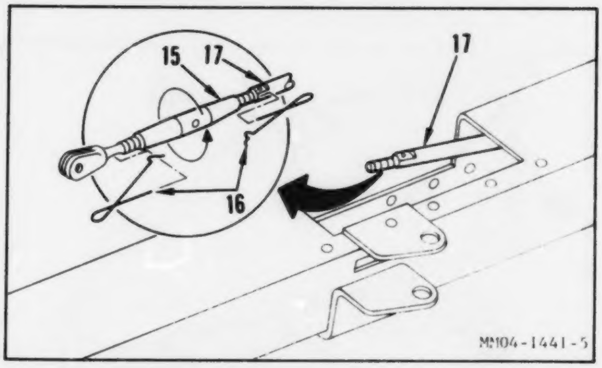


4. **Remove turnbuckle (15).**

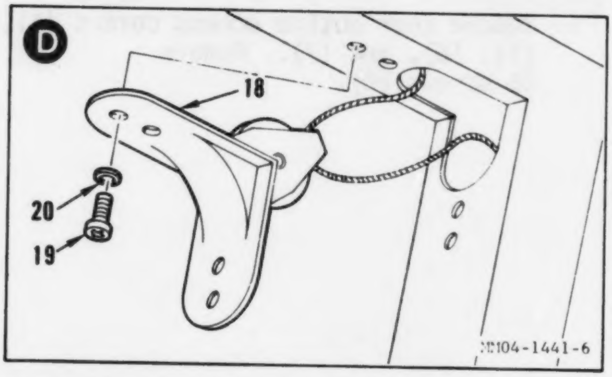
   a. Remove two clips (16).

   b. Hold cable on flats (17).

   c. Rotate turnbuckle (15) counterclockwise until free.



5. **Remove pulley bracket (18).** Remove four screws (19) and washers (20).

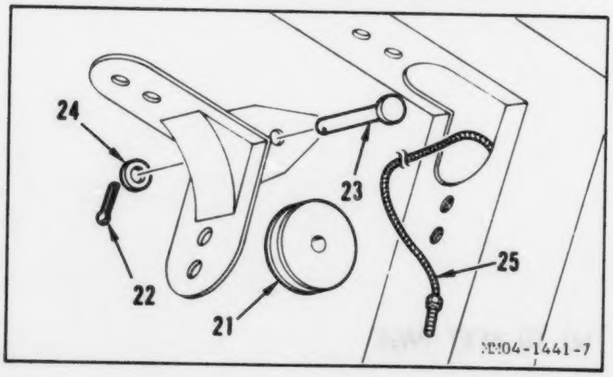


6. **Remove pulley (21).**

   a. Remove and discard cotter pin (22).

   b. Remove support pin (23) and washer (24).

   c. Pull cable (25) free.



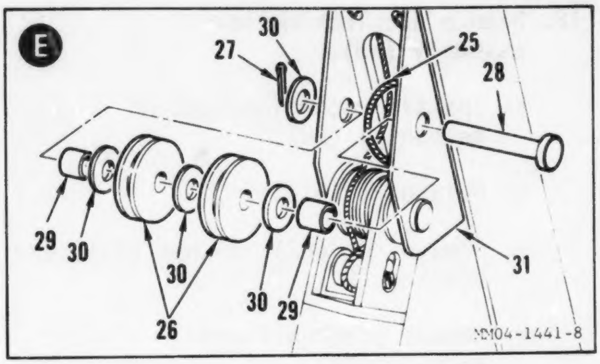
GO TO NEXT PAGE

2-3-30. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) (cont) 2-3-30

7. **Remove two pulleys (26).**

   a. Remove and discard cotter pin (27).

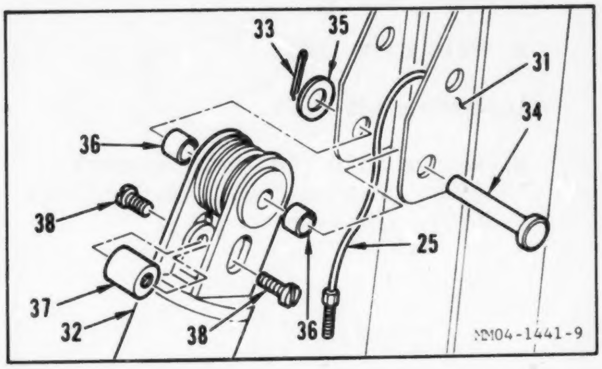
   b. Remove support pin (28), two pulleys (26), two bushings (29), four washers (30), and cable (25) from bracket (31).



8. **Remove strut (32).**

   a. Remove and discard cotter pin (33).

   b. Remove support pin (34), washer (35), two bushings (36), and strut (32) from bracket (31).



9. **Remove pulley spool (37).**

   a. Remove two screws (38).

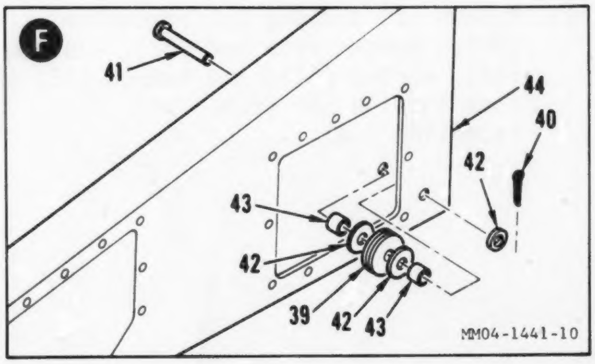
   b. Remove spool (37) from strut (32) and cable (25).

   c. Pull cable (25) free.

10. **Remove pulley (39).**

    a. Remove and discard cotter pin (40).

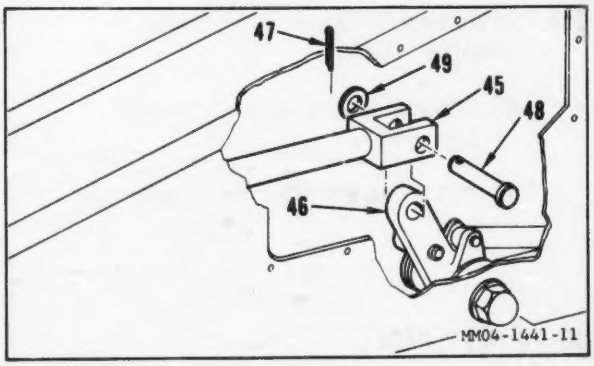
    b. Remove support pin (41), three washers (42), and two bushings (43) from door (44).



11. **Disconnect push rod (45) from locking bar (46).**

    a. Remove and discard cotter pin (47).

    b. Remove support pin (48) and washer (49).



GO TO NEXT PAGE

2-3-30. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) (cont) 2-3-30

12. Remove aft locking bar assembly (46).

a. Install retention tool on mechanism (50).

b. Hold bolt (51).

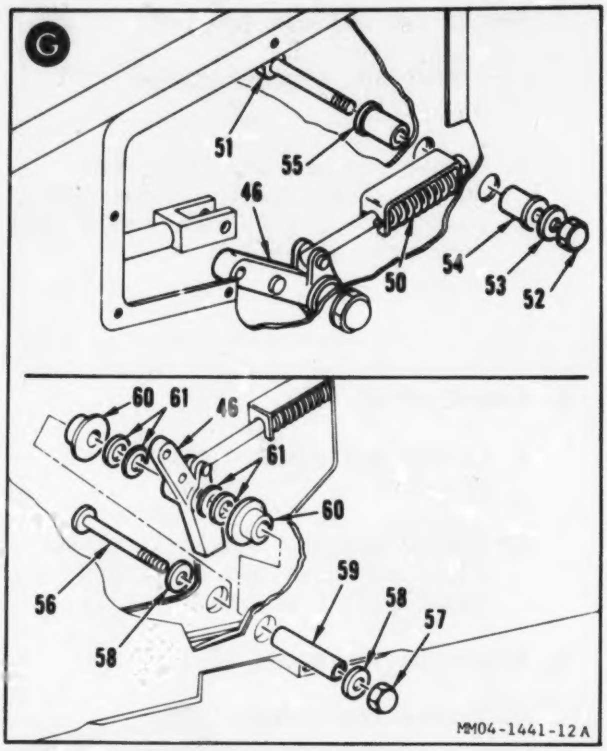
c. Remove nut (52), washer (53), and bushing (54).

d. Remove bolt (51) and bushing (55).

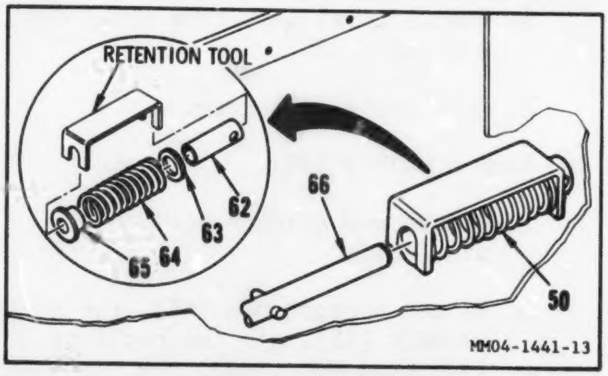
e. Hold bolt (56).

f. Remove nut (57).

g. Remove bolt (56), two washers (58), bushing (59), two bushings (60), and washers (61).



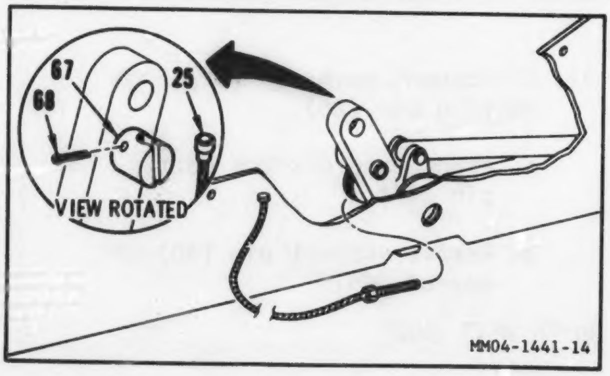
13. Remove aft locking bar mechanism (50). Remove retainer (62), washer (63), spring (64), and keeper (65) from locking bar (66). Use retention tool.



14. Disconnect cable (25) from adapter (67).

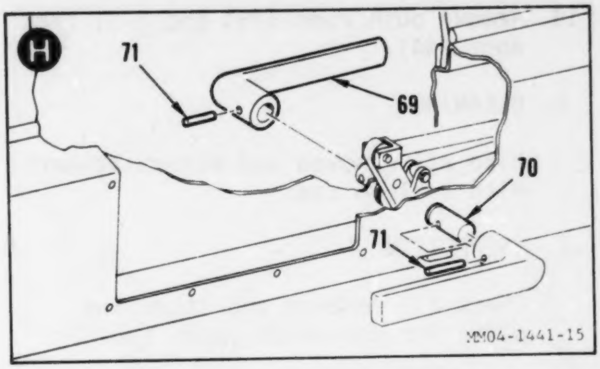
a. Remove and discard cotter pin (68).

b. Pull cable (25) from adapter (67).



GO TO NEXT PAGE

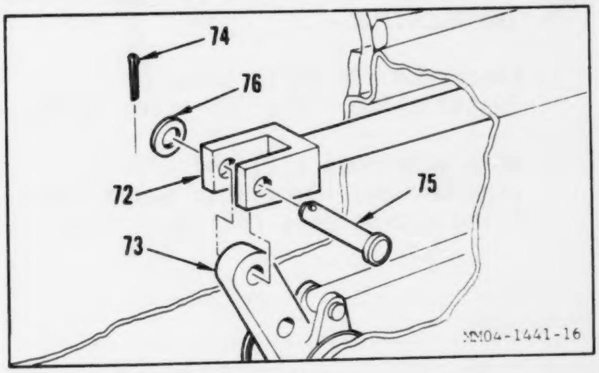
15. **Remove two door handles (69) from shaft (70).** Remove and discard two roll pins (71).



16. **Disconnect push rod (72) from forward locking bar assembly (73).**

    a. Remove and discard cotter pin (74).

    b. Remove support pin (75) and washer (76) from bar (73) and push rod (72).

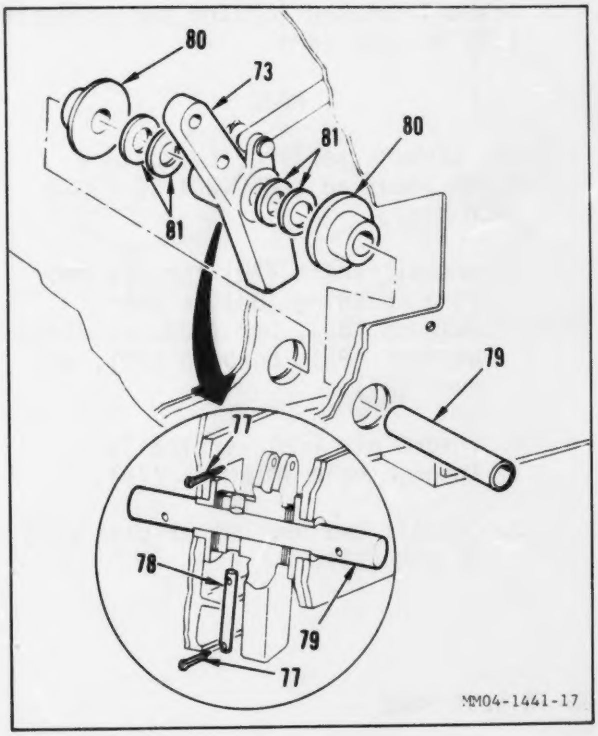


17. **Remove forward locking bar assembly (73).**

    a. Remove and discard two cotter pins (77).

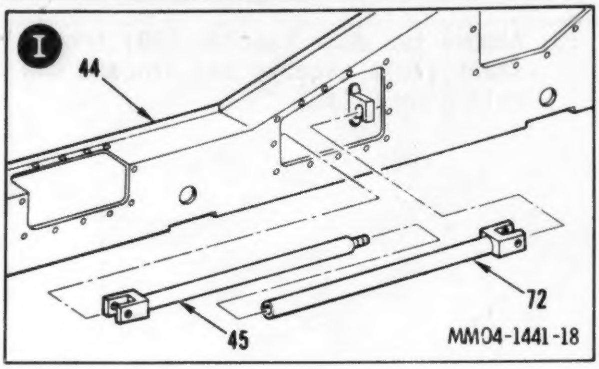
    b. Remove pin (78).

    c. Remove handle shaft (79), two bushings (80), and required washers (81).



GO TO NEXT PAGE

18. **Remove push rods (45) and (72) from door (44).**



B. **CLEANING**

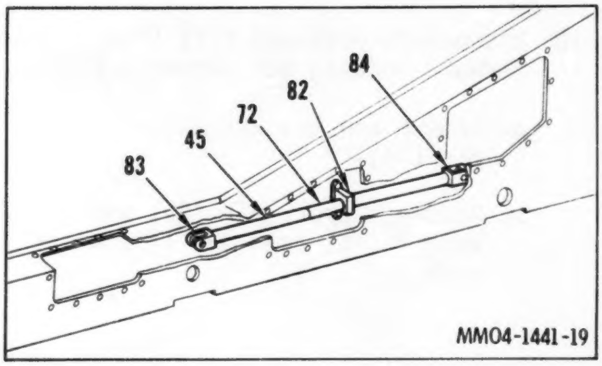
Wipe all removed and attaching parts with a clean rag.

C. **INSPECTION**

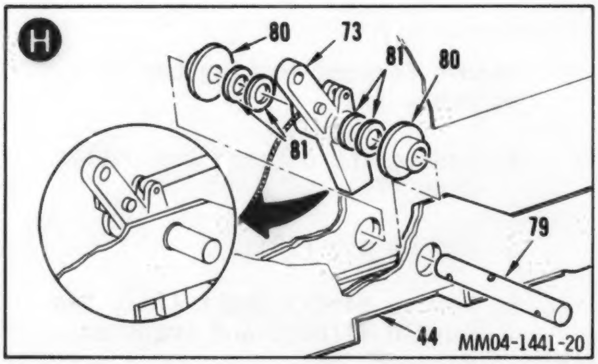
Check all removed and attaching parts for corrosion (para 1-5-38).

D. **INSTALLATION**

1. **Lubricate all parts before installation.** Use lubricant (E48).
2. **Join push rods (45) and (72) together and install in guide (82).** Aline clevis ends (83) and (84).



3. **Install forward locking bar assembly (73) in door (44).**



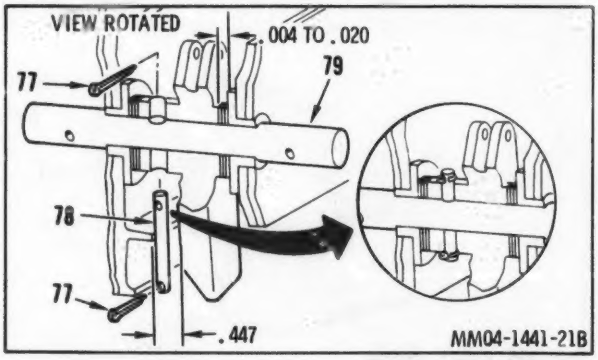
NOTE

Use washers required to achieve **0.447 INCH** gap and **0.004 TO 0.020 INCH** gap.

a. Install shaft (79) through door (44), bushing (80), eight washers (81), bar (73), required washers (81), bushing (80), and door (44).

b. Insert pin (78) vertically through hole in shaft (79).

c. Install two new cotter pins (77) in pin (78).



GO TO NEXT PAGE

2-3-30. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) (cont) 2-3-30

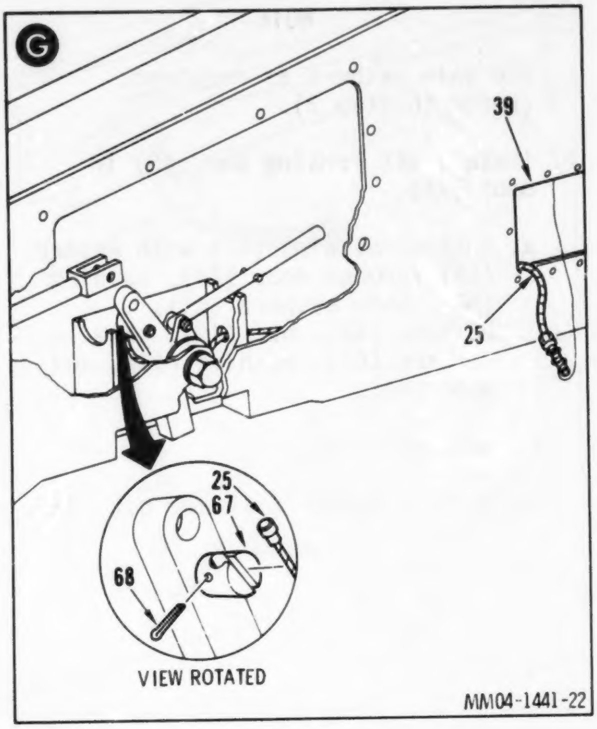
4. Install cable (25) on adapter (67).

a. Position cable (25) on adapter (67).

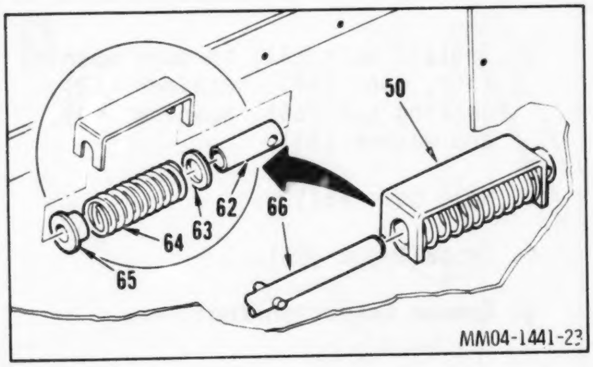
b. Install new cotter pin (68).

c. Attach lockwire (E49) to cable end (25).

d. Feed cable (25) to pulleys (39). Use lockwire (E49).



5. **Install aft locking bar (50).** Stack and slide keeper (65), spring (64), washer (63), and retainer (62) on locking bar (66). Use spring retention tool.



GO TO NEXT PAGE

2-3-30. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) (cont) 2-3-30

NOTE

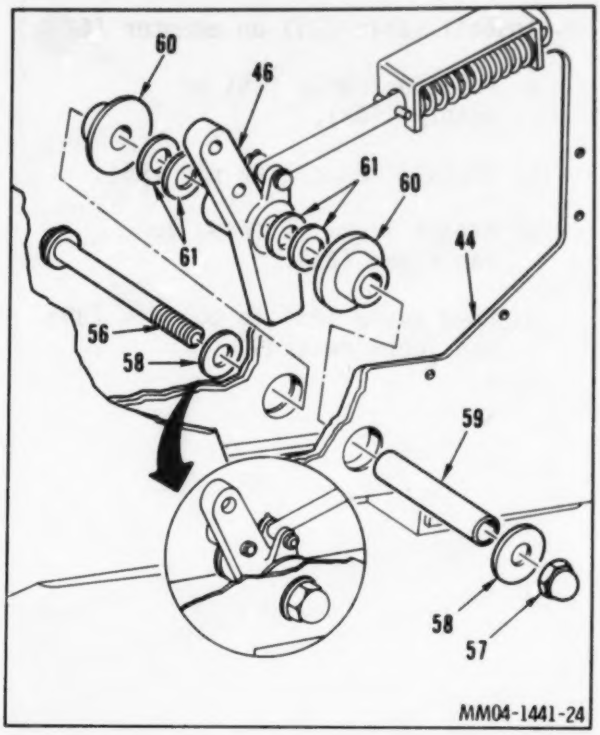
Use shim washers as required, (refer to step 3).

6. **Install aft locking bar (46) in door (44).**

   a. Install bushing (56) with washer (58) through door (44), bushing (60), shim washers (61), bushing (59), bar (46), shim washers (61), bushing (60), and door (44).

   b. Hold bolt (56).

   c. Install washer (58) and nut (57).

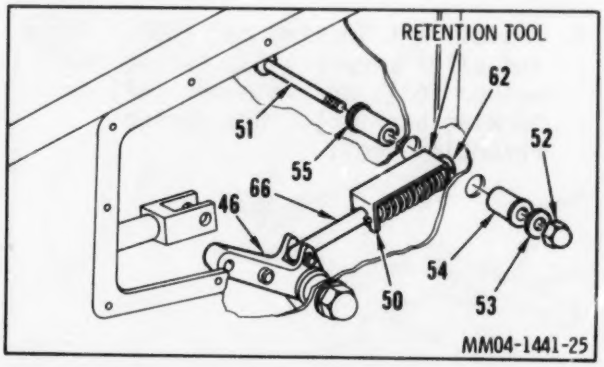


   d. Install bolt (51) through bushing (55), door (44), retainer (62), locking bar (66), bushing (54), and washer (53).

   e. Hold bolt (51).

   f. Install nut (52).

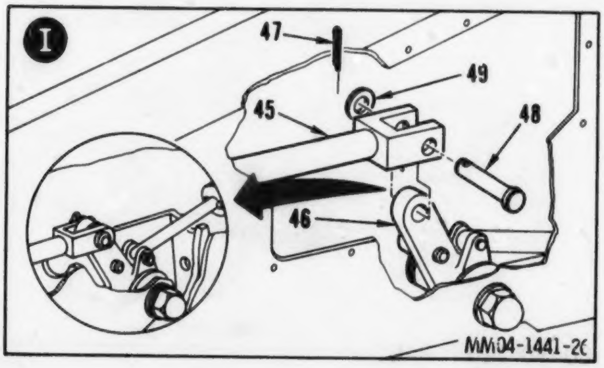
   g. Remove retention tool.



7. **Connect push rod (45) to aft locking bar assembly (46).**

   a. Install support pin (48) through push rod (45), bar (46), and washer (49).

   b. Install new cotter pin (47).



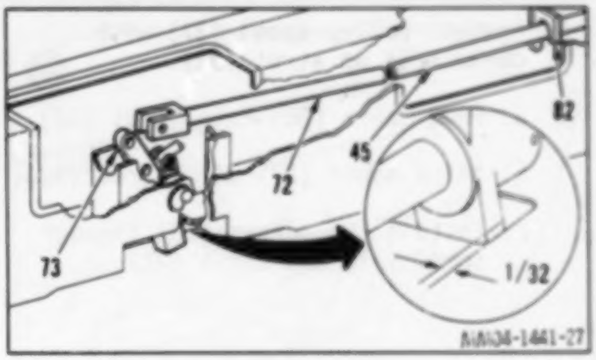
GO TO NEXT PAGE

2-3-30. CPG STATION ACCESS DOOR MECHANISM REPAIR (AVIM) (cont) 2-3-30

8. Connect push rod (72) to forward locking bar (73).

a. Turn rod (72) counterclockwise to lengthen or clockwise to shorten until rod (72) is 1/32-inch from stop.

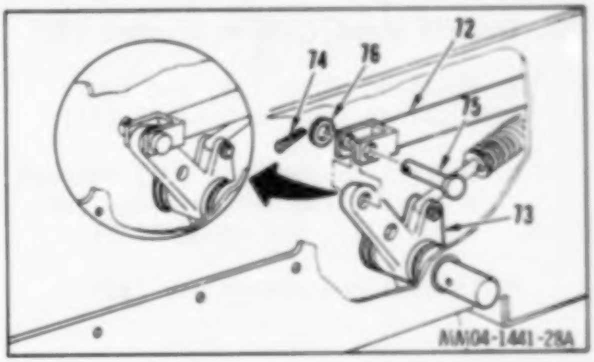
b. Aline rod (45) in guide (82).



c. Aline rod (72) with bar (73).

d. Install support pin (75) and washer (76).

e. Install new cotter pin (74).



9. Install lower pulley (39).

a. Feed cable (25) through door (44) to upper area. Use lockwire (E49).

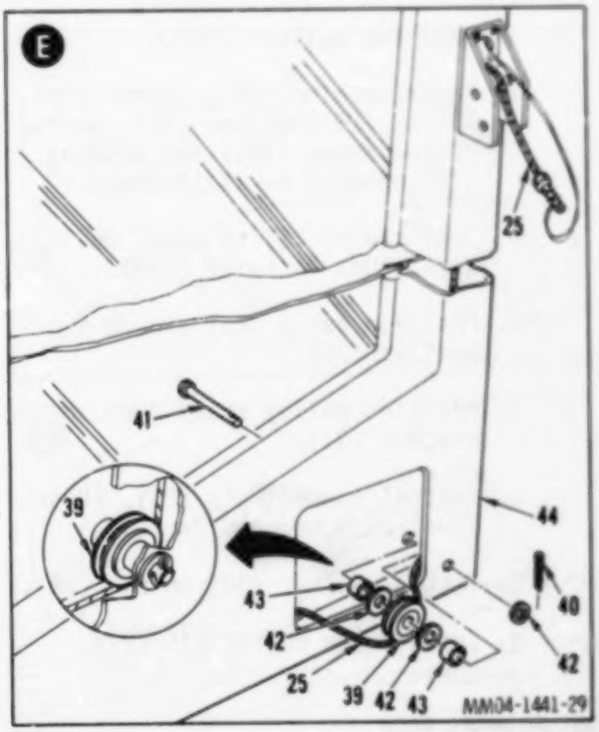
b. Stack bushing (43), washer (42), pulley (39), washer (42), and bushing (43) on 1/4 by 1-7/16 dowel.

c. Position cable (25) on pulley (39) and in door (44).

d. Install support pin (41). Push dowel through.

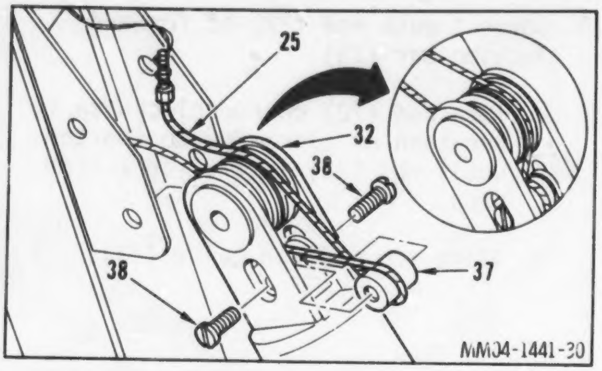
e. Install washer (42) on pin (41).

f. Install new cotter pin (40).

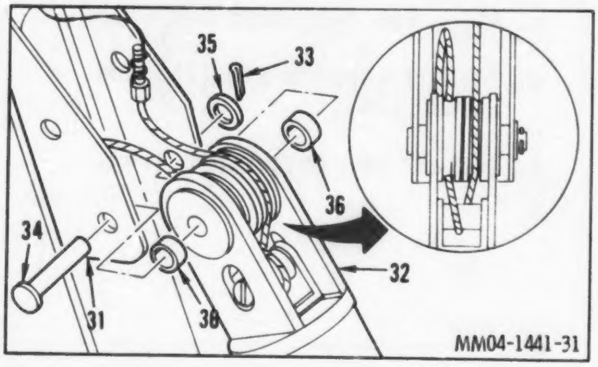


GO TO NEXT PAGE

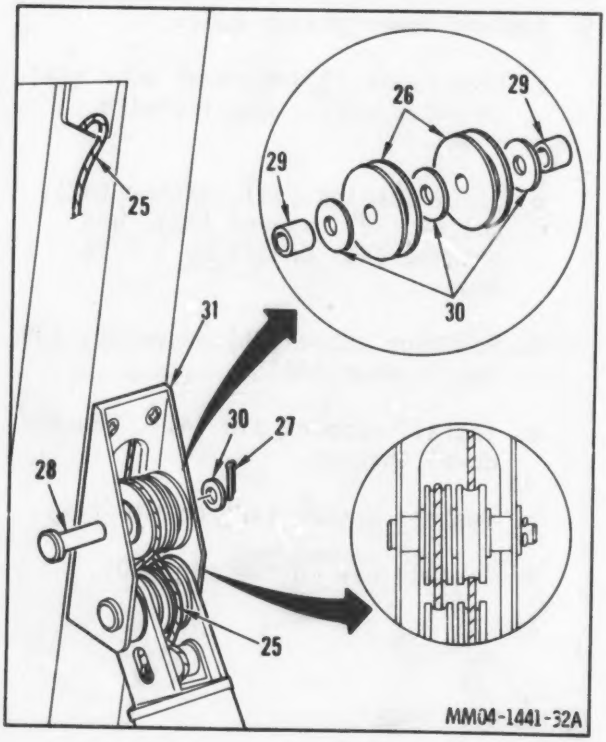
9. **Install pulley spool (37) with cable (25) on strut (32).**
    a. Feed cable (25) into strut (32).
    b. Aline spool (37) with strut (32).
    c. Install two screws (38) through spool (37) and strut (32).



10. **Install strut (32) on bracket (31).**
    a. Position strut (32) and two bushings (36) in bracket (31).
    b. Install support pin (34) through bracket (31), two bushings (36), strut (32), and washer (35).
    c. Install new cotter pin (33).

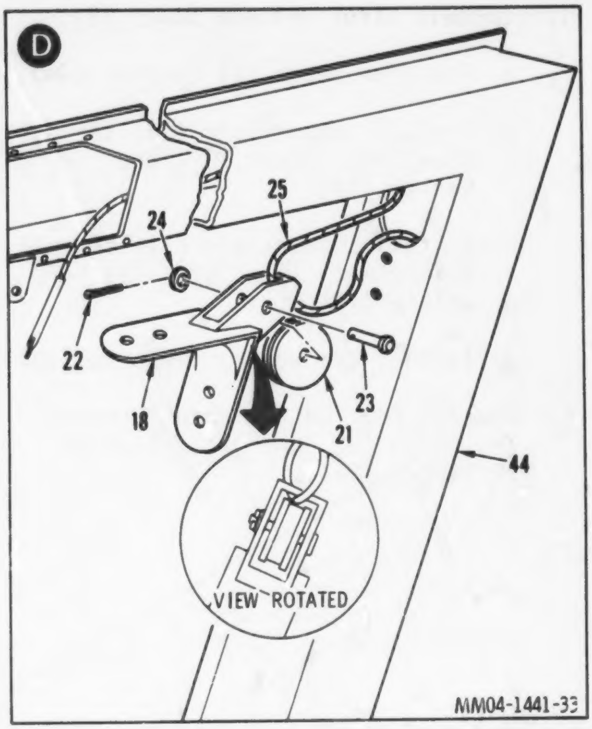


11. **Install two pulleys (26).**
    a. Stack bushing (29), washer (30), pulley (26), washer (30), pulley (26), washer (30), and bushing (29) on 3/16 by 15/16 dowel.
    b. Feed cable (25) to upper pulley area. Use lockwire (E49).
    c. Position cable (25) around two pulleys (26).
    d. Position pulley stack (26) in bracket (31).
    e. Install support pin (28). Push dowel pin through.
    f. Install washer (30) on pin (28).
    g. Install new cotter pin (27).

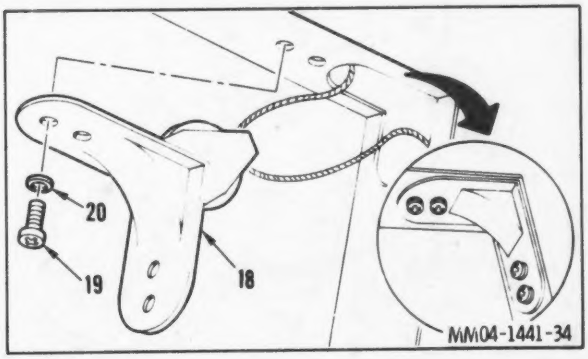


GO TO NEXT PAGE

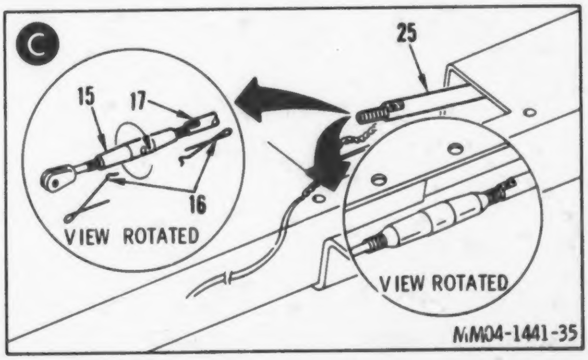
12. **Install pulley (21) on bracket (18).**
    a. Feed cable (25) through bracket (18) and door (44) to top forward area. Use lockwire (E49).
    b. Position pulley (21) on cable (25) and in bracket (18).
    c. Install support pin (23) through bracket (18) and pulley (21).
    d. Install washer (24) on pin (23).
    e. Install new cotter pin (22).



13. **Install pulley bracket (18).** Install four screws (19) and washers (20).



14. **Install turnbuckle (15).**
    a. Remove lockwire (E49).
    b. Hold cable on flats (17).
    c. Screw turnbuckle (15) onto cable (25).



15. **Install two locking clips (16).**

GO TO NEXT PAGE

16. **Install strut release lever (9).**

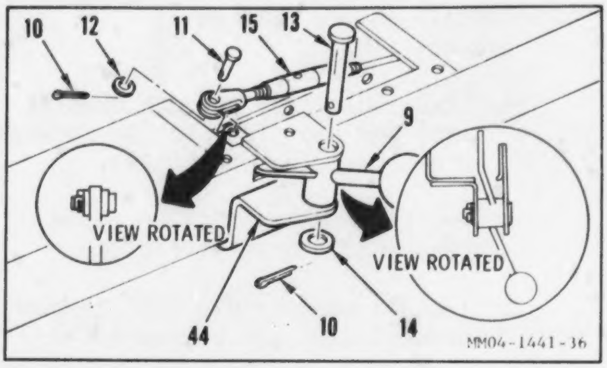
    a. Position lever (9) on door (44).

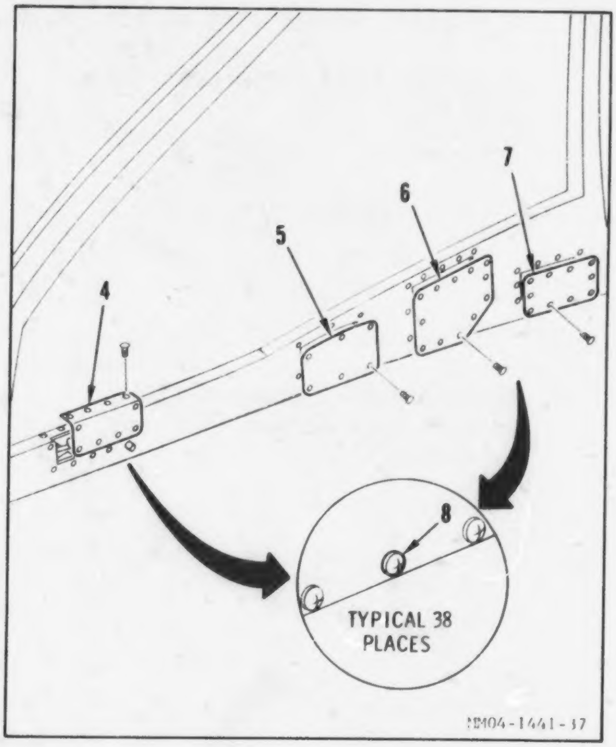
    b. Install support pin (13) through door (44), lever (9), and washer (14).

    c. Install support pin (11) through turnbuckle (15), lever (9), and washer (12).

    d. Install two new cotter pins (10).

17. **Install four bottom access covers (4), (5), (6), and (7).** Install 38 screws (8).





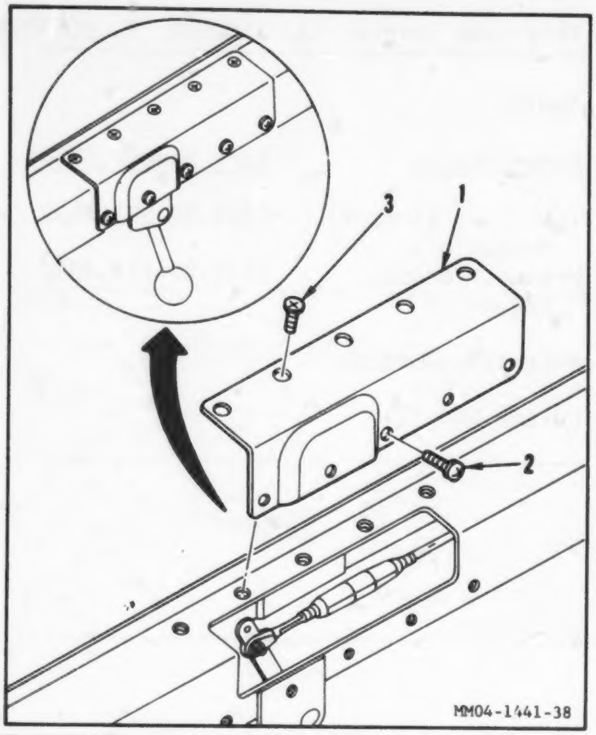
GO TO NEXT PAGE

18. **Install top access cover (1).**

    a. Install five countersunk screws (3).

    b. Install five screws (2).

19. **Adjust door lock** (para 2-3-29).

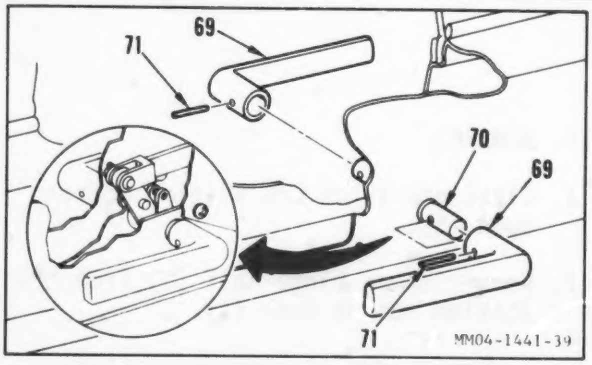


20. **Install two door handles (69).** Install two roll pins (71) through handles (69) and shaft (70).

CAUTION

To prevent door opening in flight ensure spring-back motion of door handle with pilot/CPG door open.

21. **Inspect (TI).**



END OF TASK

2-3-31. CPG STATION ACCESS DOOR LOWER HINGE HALF REMOVAL/INSTALLATION 2-3-31

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

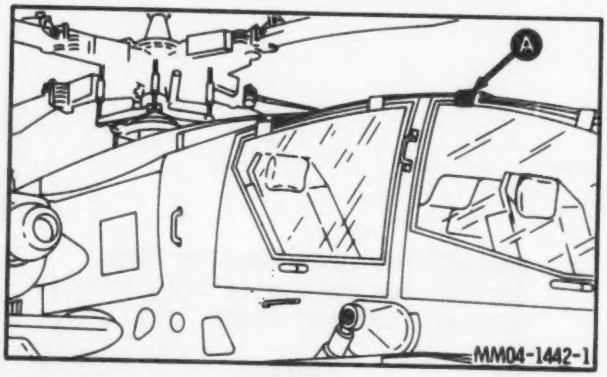
Cotter Pin (2)

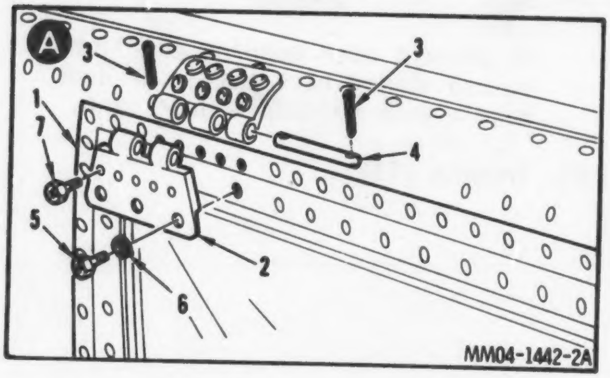
Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed





A. REMOVAL

1. **Close and latch CPG station access door (1).**

2. **Remove lower hinge half (2) from CPG station access door (1).**

   a. Remove and discard two cotter pins (3) from hinge pin (4).

   b. Remove hinge pin (4).

   c. Remove three bolts (5) and washers (6).

   d. Remove five bolts (7).

GO TO NEXT PAGE

2-3-31. CPG STATION ACCESS DOOR LOWER HINGE HALF REMOVAL/ INSTALLATION (cont) 2-3-31

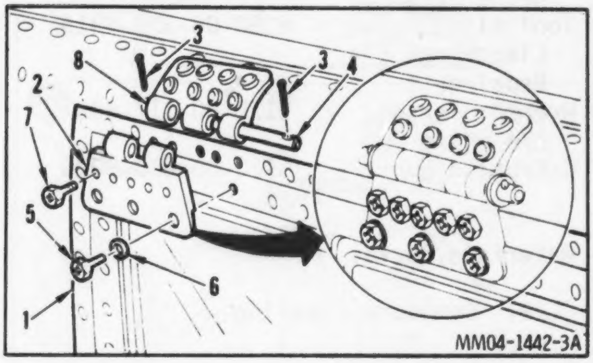
B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

Check hinge half for wear. None allowed.

D. INSTALLATION



1. **Install lower hinge half (2) on CPG door (1).**
   - a. Aline hinge halves (2) and (8).
   - b. Install five top bolts (7). Do not tighten.
   - c. Install three bottom bolts (5) with washers (6). Do not tighten.
   - d. Install hinge pin (4).
   - e. Install two new cotter pins (3) in hinge pin (4).
2. **Torque five top bolts (7) to 20 INCH-POUNDS.**
3. **Torque three bottom bolts (5) to 10 INCH-POUNDS.**
4. **Inspect (TI).**

END OF TASK

2-3-32. FORWARD CANOPY WINDSHIELD REMOVAL/INSTALLATION 2-3-32

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, Torque, 1/4 Drive	5120-00-117-4832
Extrusion Gun	5120-00-693-8070

Materials/Parts:

(E28) Compound, Sealing

Personnel Required:

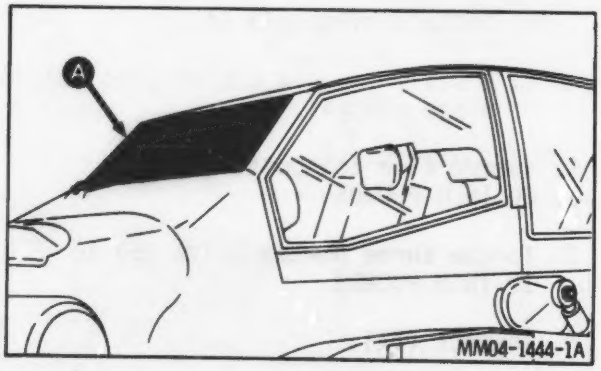
67R10	Attack Helicopter Repairer (2) One to assist
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
12-3-5	CPG wiper arm removed
12-3-7	CPG wiper link removed



GO TO NEXT PAGE

2-3-32. FORWARD CANOPY WINDSHIELD REMOVAL/INSTALLATION (cont) 2-3-32

1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**

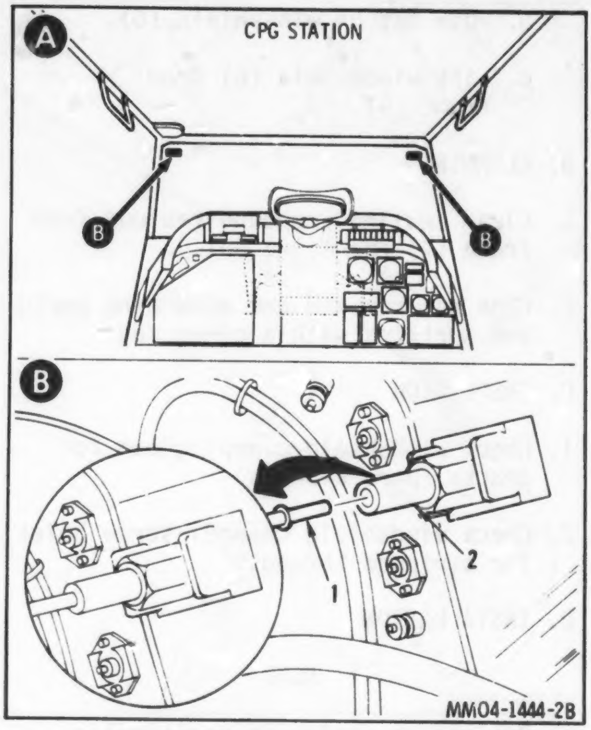
2. **Open CANOPY ANTI-ICE CONT and CANOPY ANTI-ICE circuit breakers on pilot aft circuit breaker panel.**

3. **Enter CPG station** (para 1-7-1). **Observe all safety precautions.**

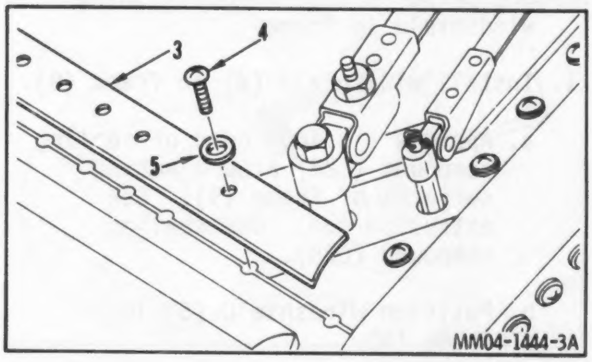
4. **Disconnect wires (1) from two anti-ice terminals (2).**

   a. Identify wires (1) for use in installation.

   b. Disconnect wires (1).



5. **Remove windshield clamping bar (3).** Remove 29 screws (4) and washers (5).

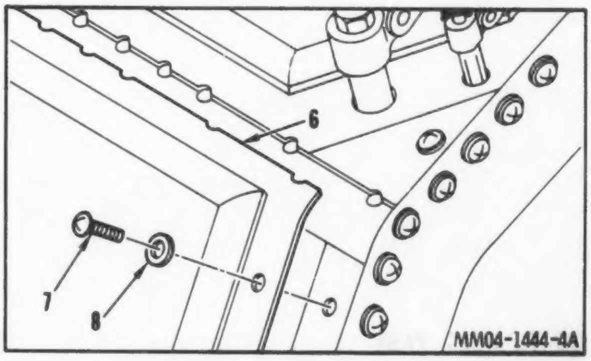


6. **Remove windshield (6).**

NOTE

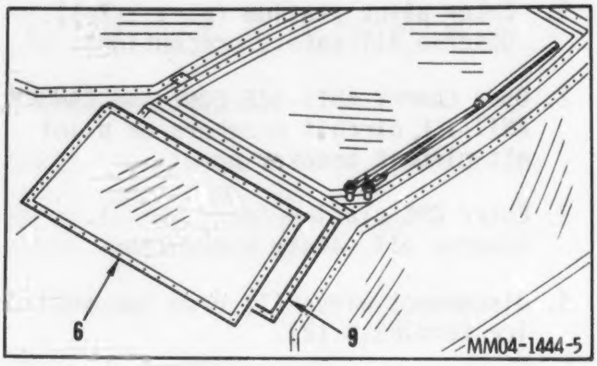
One person push windshield out.

   a. Remove 53 screws (7) and washers (8).



GO TO NEXT PAGE

2-3-32. FORWARD CANOPY WINDSHIELD REMOVAL/INSTALLATION (cont) 2-3-32



b. Push out on windshield (6).

c. Lift windshield (6) from frame (9).

B. CLEANING

1. Clean sealing compound residue from frame (4) (para 1-5-30).

2. Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. Check windshield clamping bar for cracks (para 2-3-2).

2. Check windshield channel screw holes for stripped threads.

D. INSTALLATION

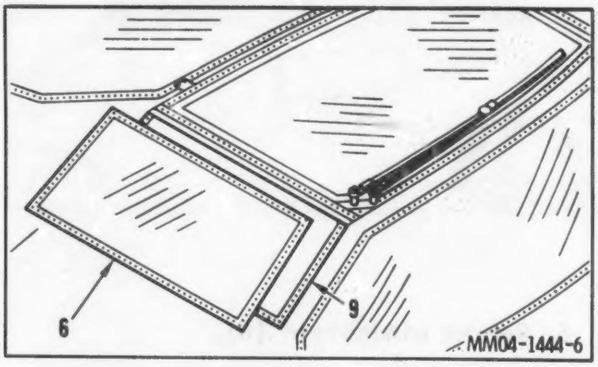
NOTE

One person assist in positioning windshield in frame.

1. Install windshield (6) in frame (9).

a. Apply a 1/8 inch bead of sealing compound (E28) around mating surfaces of frame (9). Use extrusion gun. Use sealing compound (E28).

b. Position windshield (6) in frame (9).



GO TO NEXT PAGE

2-3-32. FORWARD CANOPY WINDSHIELD REMOVAL/INSTALLATION (cont) 2-3-32

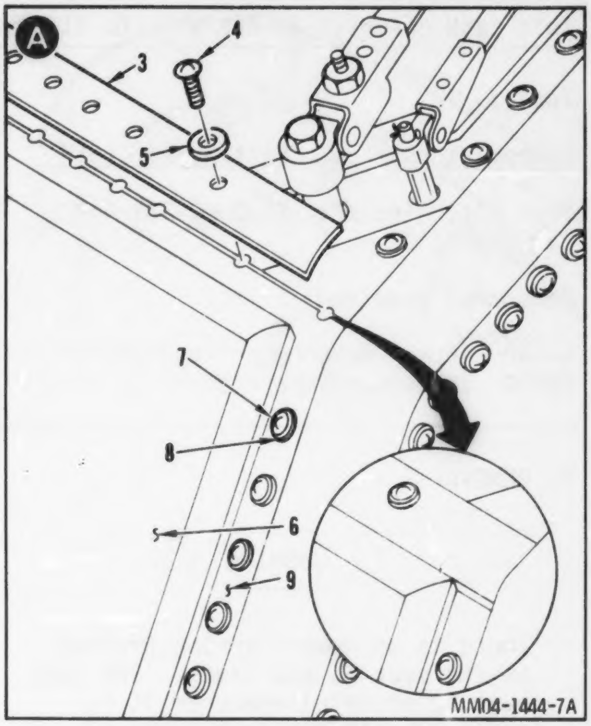
c. Install 53 washers (8) and 53 screws (7) until screws (7) are snug against washers (8) and windshield (6) is in complete contact with frame (9).

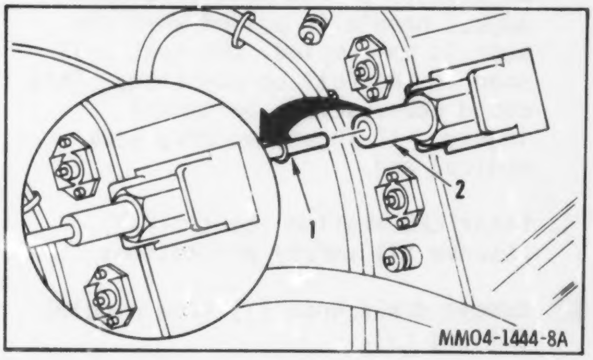
2. **Torque screws (7) to 5 INCH-POUNDS.**

3. **Install windshield clamping bar (3).** Install 29 washers (5) and 29 screws (4).

4. **Torque screws (4) to 20 INCH-POUNDS.**

5. **Inspect (TI).**





6. **Connect wires (1) to two anti-ice terminals (2).**

7. **Install CPG wiper arm** (para 12-3-5).

8. **Install CPG wiper link** (para 12-3-7).

9. **Perform canopy defog/deice system operational check** (TM 55-1520-238-T).

10. **Perform canopy windshield wiper system operational check** (TM 55-1520-238-T).

END OF TASK

2-3-33. CANOPY JETTISON SUPPORT DRAIN TUBE REPLACEMENT 2-3-33

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

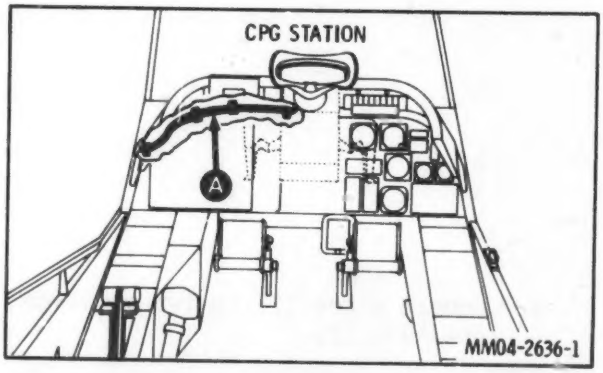
Personnel Required:

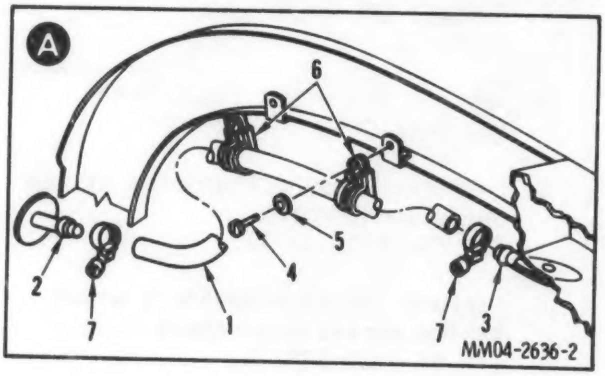
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL





WARNING

There is an upward spring preload on the seat at all times. The seat must be occupied whenever it is adjusted. If the seat vertical adjust handle is pulled when the seat is unoccupied, the seat will snap to the full up-position. This could cause severe personnel injury. If injury occurs, seek medical aid.

1. Enter CPG station (para 1-7-1). Observe all safety precautions.

2. Remove drain hose (1) from nipples (2) and (3).

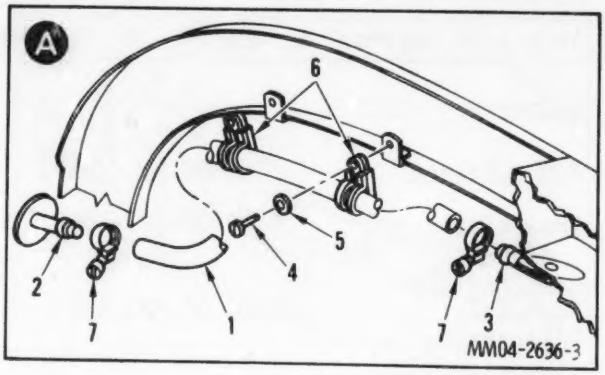
   a. Remove two screws (4) and two washers (5).

   b. Remove two clamps (6) from drain hose (1).

   c. Loosen two hose clamps (7). Remove hose (1) from nipples (2) and (3).

GO TO NEXT PAGE

2-3-33. CANOPY JETTISON SUPPORT DRAIN TUBE REPLACEMENT (cont) 2-3-33



B. CLEANING

Wipe nipples with a clean rag.

C. INSPECTION

Check nipples for damage.

D. INSTALLATION

1. Install drain hose (1) on nipples (2) and (3).

   a. Install two hose clamps (7) on hose (1).

   b. Install hose (1) on nipples (2) and (3).

   c. Slide clamps (7) in place and tighten.

   d. Install two clamps (6) on hose (1).

   e. Install two washers (5) and two screws (4) through two clamps (6).

2. Inspect (TI).

END OF TASK

2-3-34. UPPER CANOPY WINDSHIELD REMOVAL/INSTALLATION 2-3-34

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, Torque, 1/4 Drive	5120-00-117-4832
Extrusion Gun	5120-00-693-8070

Materials/Parts:

(E28) Sealing Compound

Personnel Required:

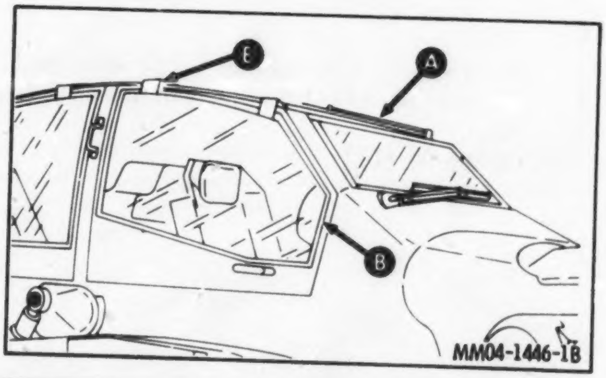
67R10	Attack Helicopter Repairer (2) One to assist
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

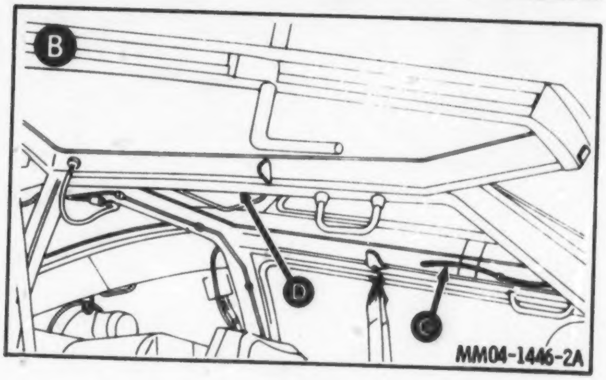
References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
12-3-4	Pilot wiper arm removed
12-3-6	Pilot wiper link removed





A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**
2. **Open CANOPY ANTI-ICE CONT and CANOPY ANTI-ICE circuit breakers on pilot aft circuit breaker panel.**
3. **Enter CPG station (para 1-7-1). Observe all safety precautions.**

GO TO NEXT PAGE

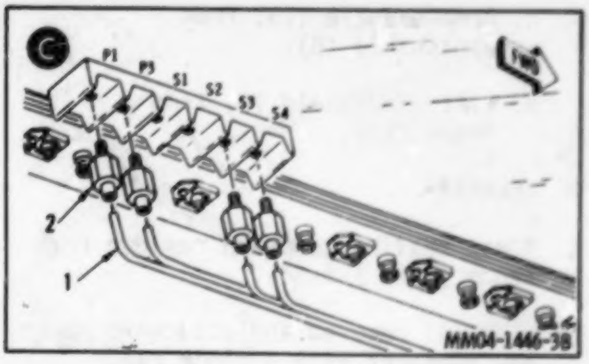
2-3-34. UPPER CANOPY WINDSHIELD REMOVAL/INSTALLATION (cont) 2-3-34

4. **Disconnect four wires (1) from anti-ice terminals (2).**

   a. Identify wires (1) for use in installation.

   b. Remove four terminals (2) for use in installation.

   c. Disconnect four wires (1).

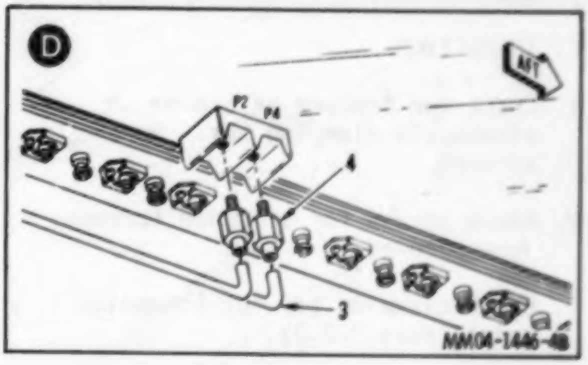


5. **Disconnect two wires (3) from anti-ice terminals (4).**

   a. Identify wires (3) for use in installation.

   b. Remove two terminals (4) for use in installation.

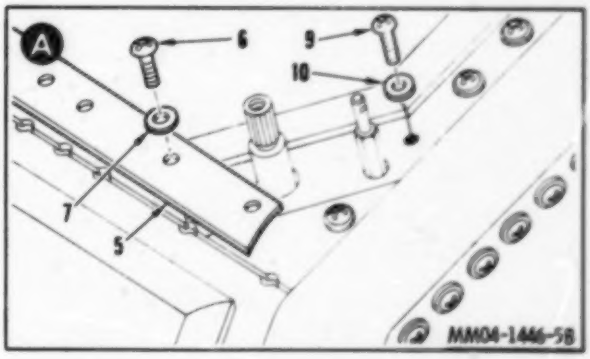
   c. Disconnect two wires (3).



6. **Remove windshield clamping bar (5).** Remove 29 screws (6) and 29 washers (7).

NOTE

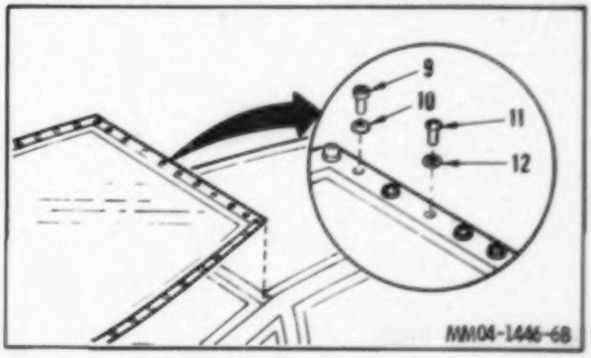
One person assist in pushing windshield up.



7. **Remove canopy windshield (8).**

   a. Remove 62 screws (9) and 62 washers (10).

   b. Remove seven screws (11) and washers (12).

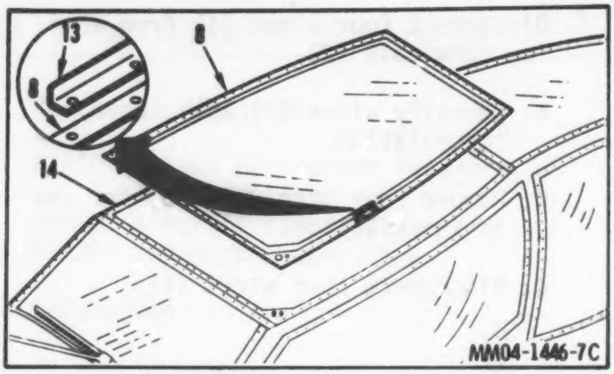


GO TO NEXT PAGE

2-3-34. UPPER CANOPY WINDSHIELD REMOVAL/INSTALLATION (cont) 2-3-34

c. Remove angle (13) from windshield (8).

d. Lift windshield (8) from frame (14).



B. CLEANING

1. Clean sealing compound residue from frame (para 1-5-36).
2. Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. Check for cracked or broken windshield clamping bar. None allowed.
2. Check screws for stripped threads. None allowed.
3. Check clamping bar for elongated holes (para 2-3-2).

GO TO NEXT PAGE

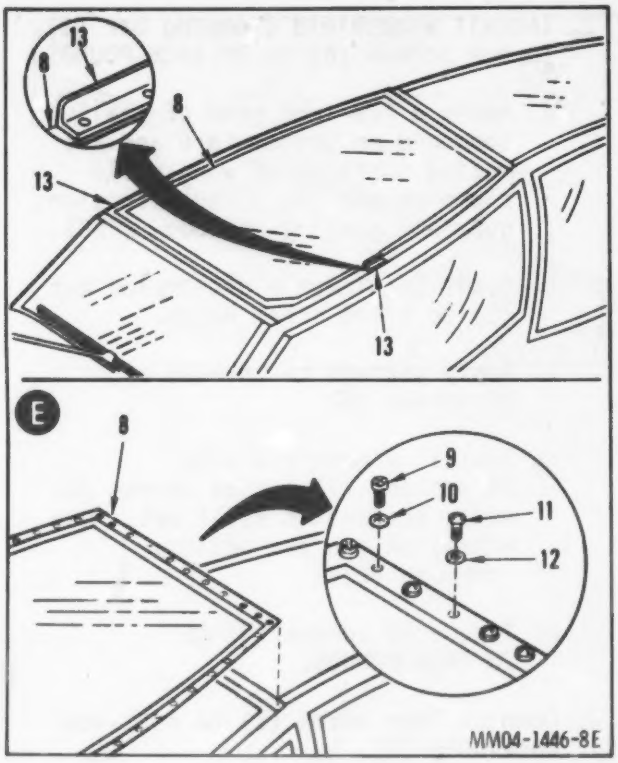
2-3-34. UPPER CANOPY WINDSHIELD REMOVAL/INSTALLATION (cont) 2-3-34

D. INSTALLATION

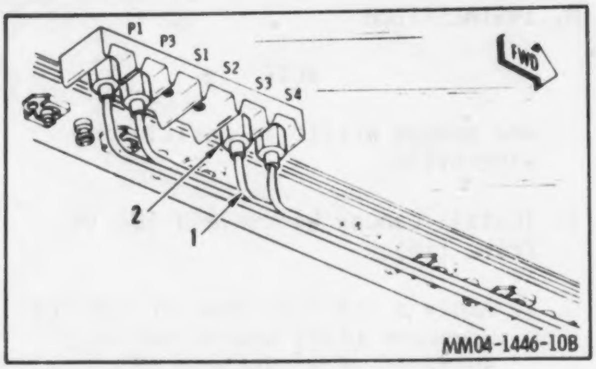
NOTE

One person assist in positioning windshield.

1. **Install canopy windshield (8) in frame (14).**
   a. Apply a 1/8-inch bead of sealing compound (E28) around mating surfaces of windshield (8). Use extrusion gun, and sealing compound (E28).
   b. Position windshield (8) in frame (14).
   c. Position angle (13) on windshield (8).
   d. Install 62 screws (9) with 62 washers (10) and 7 screws (11) with 7 washers (12) until screws (9) and (11) are snug against washers (10) and (12) and windshield (8) is in complete contact with frame (14).
2. **Torque screws (9) and (11) to 5 INCH-POUNDS.**



2-3-34. UPPER CANOPY WINDSHIELD REMOVAL/INSTALLATION (cont) 2-3-34



3. **Install windshield clamping bar (5). Torque screws (6) to 20 INCH-POUNDS.**
   a. Apply a 1/8-inch bead of sealing compound on bottom fore and aft mating surfaces of windshield clamping bar (5). Use extrusion gun, and sealing compound (E28).
   b. Position windshield clamping bar (5) to aline screw holes.
   c. Apply sealant to threads of 29 screws (6).
   d. Install windshield with 29 washers (7) and 26 screws (6) while sealant is still wet. Use extrusion gun and sealing compound (E28).
   e. Torque 29 screws (6) to 20 INCH-POUNDS.
4. **Connect four wires (1) to anti-ice terminals (2).**
   a. Connect wire H70C16 (1) to terminal P1 (2).
   b. Connect wire H70B16 (1) to terminal P3 (2).
   c. Connect wire H73A24 (1) to terminal S3 (2).
   d. Connect wire H74A24 (1) to terminal S4 (2).

GO TO NEXT PAGE

2-3-34. UPPER CANOPY WINDSHIELD REMOVAL/INSTALLATION (cont) 2-3-34

5. **Connect two wires (3) to anti-ice terminals (4).**

   a. Connect wire H69B16 (3) to terminal P2 (4).

   b. Connect wire H71B16 (3) to terminal P4 (4).

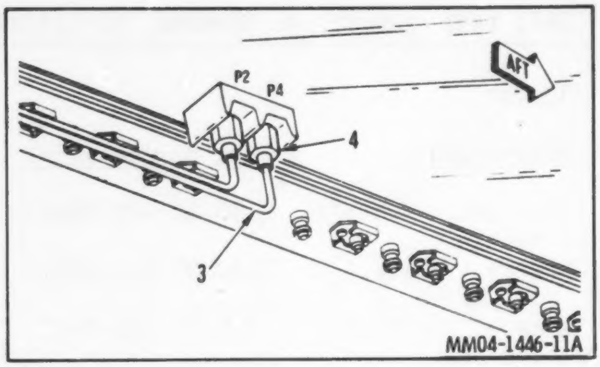
6. **Inspect (TI).**

7. **Install pilot wiper link** (para 12-3-6).

8. **Install pilot wiper arm** (para 12-3-4).

9. **Perform canopy defog/de-ice system operational check** (TM 55-1520-238-1).

10. **Perform windshield wiper system operational check** (TM 55-1520-238-1).



END OF TASK

2-3-35. LEFT FORWARD CANOPY PANEL REMOVAL/INSTALLATION 2-3-35

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Set, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Personnel Required:

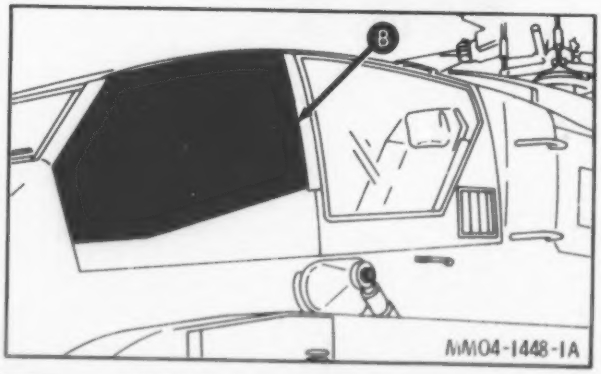
67R10	Attack Helicopter Repairer (2) One to support panel
67R20	Attack Helicopter Repairer
66R30	Inspector/Supervisor

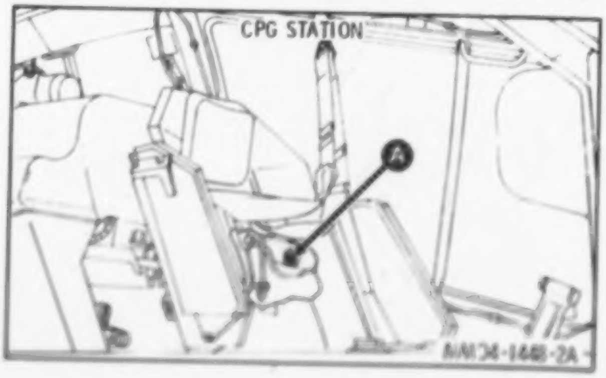
Materials/Parts:

	Packing
(E4)	Tape, Pressure-Sensitive
(E12)	Sealant, Adhesive
(E29)	Lockwire
(E32)	Cloth, Lint-Free

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed





A. REMOVAL

1. Enter CPG station (para 1-7-1). Observe all safety precautions.

GO TO NEXT PAGE

2-3-35. LEFT FORWARD CANOPY PANEL REMOVAL/INSTALLATION (cont) 2-3-35

WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe personal injury. If injury occurs, seek medical aid.

CAUTION

Remove detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

2. **Remove detonating cord (1) from severance initiation block (2).**

   a. Remove lockwire.

   b. Hold block (2).

   c. Remove fitting (3).

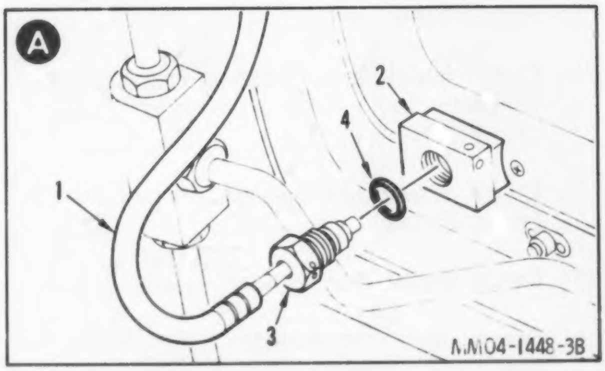
   d. Remove and discard packing (4).

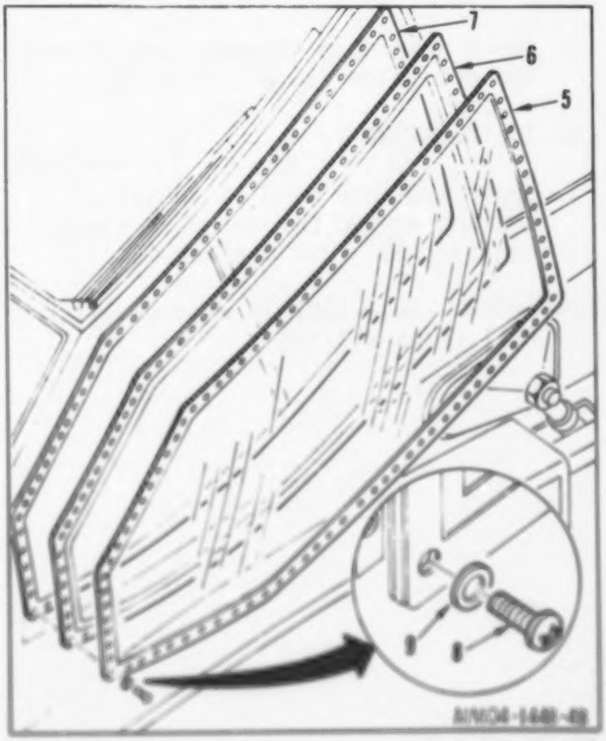
   e. Cover block (2) and fitting (3). Use clean, lint-free cloth (E32) and pressure sensitive tape (E4).

3. **Remove window panel (5) and severance assembly (6) from canopy panel frame (7).**

   a. One person support panel (5) and severance assembly (6) during removal.

   b. Remove 81 screws (8) and washers (9).





GO TO NEXT PAGE

2-3-35. LEFT FORWARD CANOPY PANEL REMOVAL/INSTALLATION (cont) 2-3-35

4. Remove sectional seal (10) from frame (7). Remove six sections of seal (10) from frame (7).

B. CLEANING

1. Clean adhesive residue from frame (para 1-5-36).

2. Wipe frame and severance assembly with a clean lint-free cloth (E32).

C. INSPECTION

1. Check block and fitting for damaged threads
(para 12-6-1).

2. Check frame for damaged screw holes (para 2-3-2).

3. Check panel for cracks (para 2-3-2).

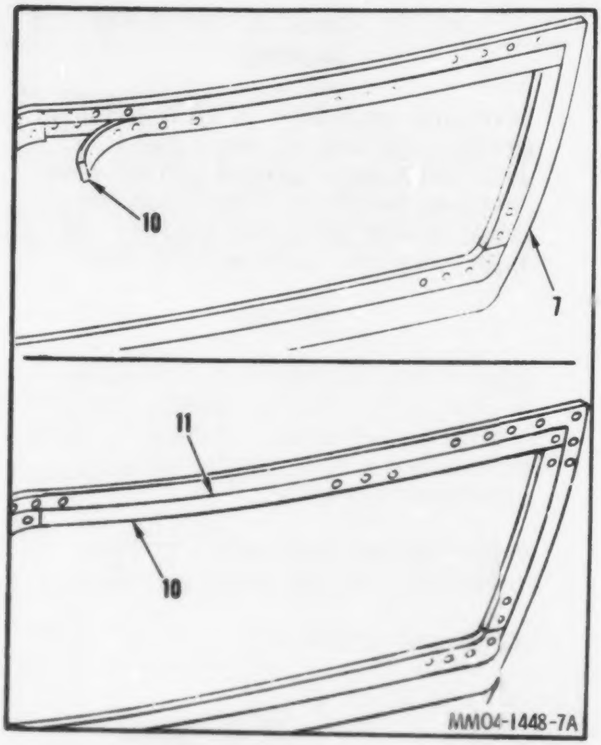
4. Check cord for damage. Any break in the cord requires replacement.

5. Check severance assembly and frame for corrosion (para 1-5-38).

D. INSTALLATION

1. Apply 1/8-inch bead of adhesive sealant around perimeter of window cavity (11). Use sealant (E12).

2. Install seal (10) in window cavity (11) (para 2-3-70).



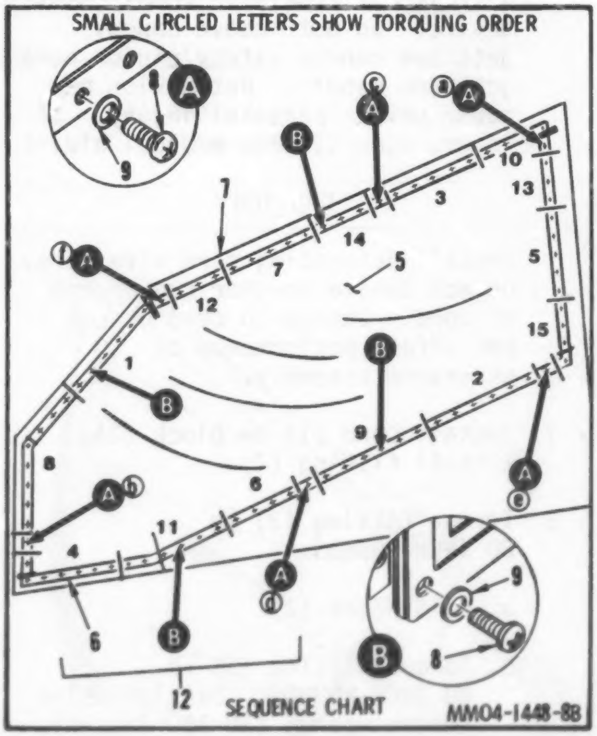
GO TO NEXT PAGE

2-3-35. LEFT FORWARD CANOPY PANEL REMOVAL/INSTALLATION (cont) 2-3-35

WARNING

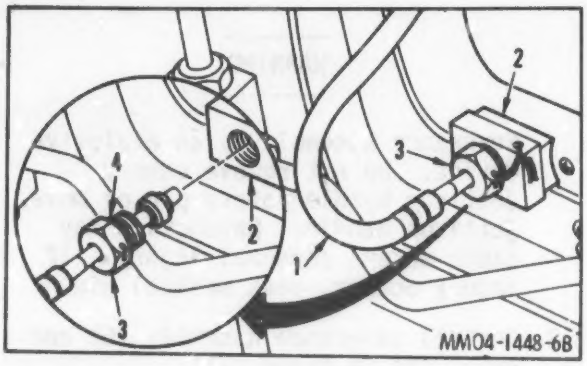
Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe personal injury. If injury occurs, seek medical aid.

2. **Install severance assembly (6) and panel (5) in frame (7).**
   - a. With helper, position and hold panel (12) in frame (7).
   - b. Install six alinement screws (8) with washers (9) in locations shown in illustration. Do not tighten.
   - c. Install 75 washers (9) and screws (8) in group sequence 1 thru 15 shown in illustration. Do not tighten.
   - d. Tighten six screws (8), in sequence a, b, c, d, e, and f shown in illustration, until screws (8) are snug against washers (9).
   - e. Tighten 75 screws (8), in group sequence 1 thru 15 shown in illustration, until screws (8) are snug against washers (9) and panel (12) is in complete contact with frame (7).
3. **Torque six screws (8) to 5 INCH-POUNDS in sequence a, b, c, d, e, and f shown in illustration.** Use 1/4 drive torque wrench (0-30 in.-lb).
4. **Torque 75 screws (8) another 5 INCH-POUNDS in group sequence 1 through 15 shown in illustration. Use 1/4 drive torque wrench (0-30 in.-lb).**



GO TO NEXT PAGE

2-3-35. LEFT FORWARD CANOPY PANEL REMOVAL/INSTALLATION (cont) 2-3-35



5. Enter CPG station (para 1-7-1). Observe all safety precautions.

6. Install new packing (4) on fitting (3).

WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe personal injury. If injury occurs, seek medical aid.

CAUTION

Install detonating cord with care. Do not damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

7. Install cord (1) on block (2). Install fitting (3).

8. Torque fitting (3) to 80 INCH-POUNDS.

   a. Hold block (2).

   b. Torque fitting (3) to 80 INCH-POUNDS. Use 1/4 drive torque wrench (30-150 in.-lb).

9. Lockwire fitting (3) to block (2). Use lockwire (E29).

10. Inspect (TI).

END OF TASK

2-3-36. CPG DOOR TRANSPARENT PANEL REMOVAL/INSTALLATION 2-3-36

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

(E12) Sealant, Adhesive

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
67R20	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-28	CPG door removed

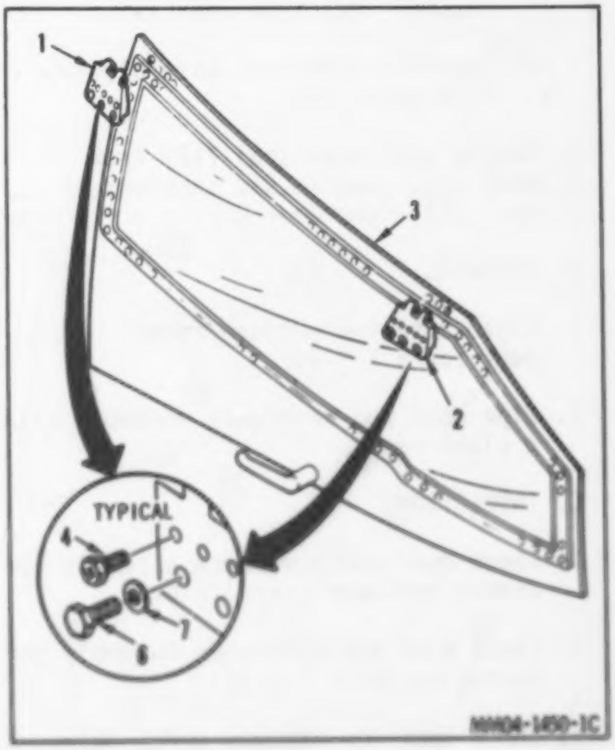
A. REMOVAL

1. **Remove hinge halves (1) and (2) from door (3).**

   a. Remove 10 bolts (4) from hinge halves (1) and (2).

   b. Remove six bolts (6) and washers (7) from hinge halves (1) and (2).

   c. Remove hinge halves (1) and (2).



GO TO NEXT PAGE

2-3-36. CPG DOOR TRANSPARENT PANEL REMOVAL/INSTALLATION (cont) 2-3-36

WARNING

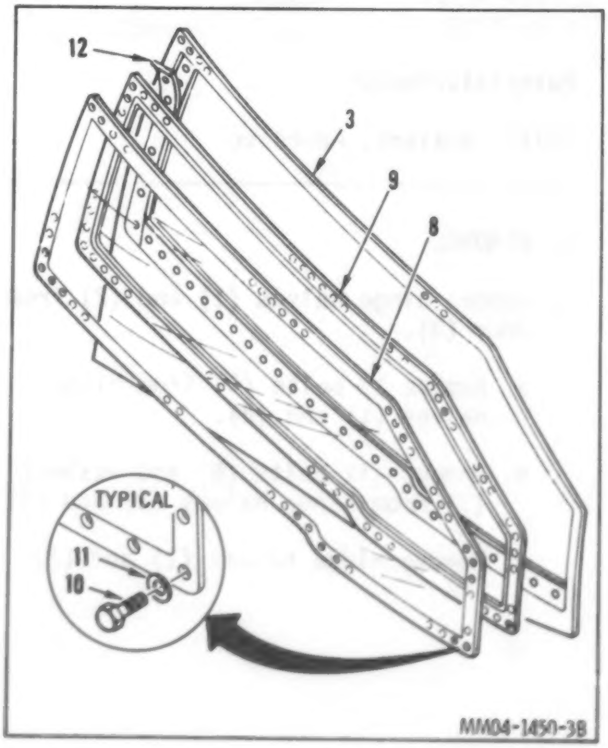
Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe personal injury. If injury occurs, seek medical aid.

2. **Remove transparent panel (8) and severance assembly (9) from door (3).**

   a. Remove 68 bolts (10) and 68 washers (11) from door (3).

   b. Remove panel (3) and severance assembly (9) from door (3).

   c. Separate severance assembly (9) from panel (8).



3. **Remove sectional seal (12) from door (3).** Remove six sections of seal (12) from door (3).

B. CLEANING

1. **Clean adhesive residue from door (para 1-5-36.**

2. **Wipe door and severance assembly with a clean rag.**

C. INSPECTION

1. **Check door and severance assembly for cracks and wear (para 12-6-1).**

2. **Check door and severance assembly for corrosion (para 15-38).**

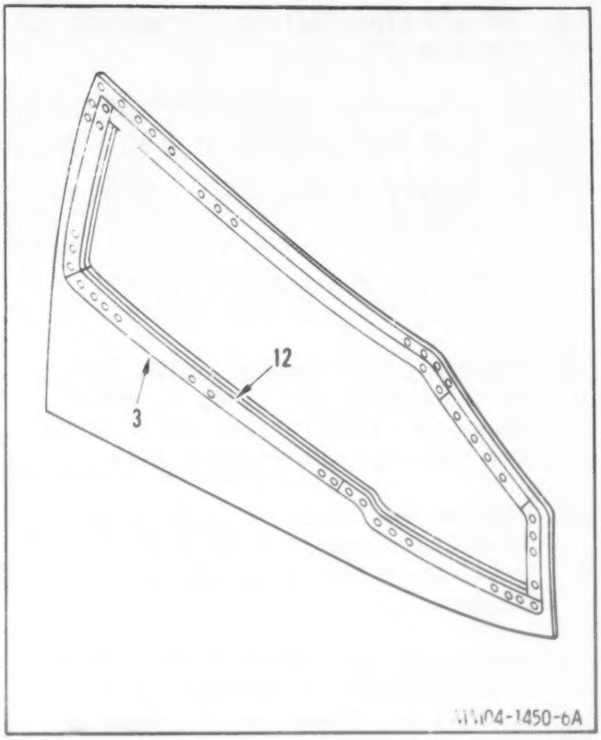
3. **Check door for damaged screw holes (para 2-3-2).**

GO TO NEXT PAGE

D. INSTALLATION

1. **Apply 1/8-inch bead of sealant around perimeter of window cavity (3).** Use sealant (E12).

2. **Install six-part sectional seal (12) in door cavity (3)** (para 2-3-70).



WARNING

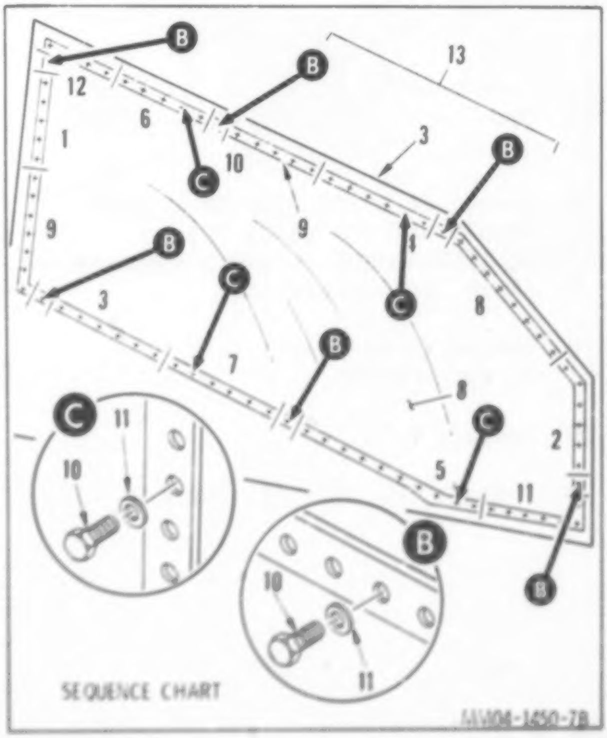
Severence assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe personal injury. If injury occurs, seek medical aid.

3. **Install severance assembly (9) and transparent panel (8) on door (3).**

   a. Position panel assembly (13) in door cavity (3).

   b. Install six washers (11) and alinement bolts (10) in locations shown in illustration. Do not tighten.

   c. Install 62 washers (11) and bolts (10) in group sequence shown in illustration. Do not tighten.



GO TO NEXT PAGE

2-3-36. CPG DOOR TRANSPARENT PANEL REMOVAL/INSTALLATION (cont) 2-3-36

4. Install hinge halves (1) and (2) on CPG door (3).

   a. Aline hinge halves (1) and (2) to attachment points on door (3).

   b. Install 10 bolts (4). Do not tighten.

   c. Install six washers (7) and bolts (6). Do not tighten.

5. Tighten six alinement bolts (10), in sequence a, b, c, d, e, and f shown in illustration, until bolts are snug against washers (11).

6. Tighten 62 bolts (10), in group sequence shown in illustration, until bolts are snug against washers (11).

7. Torque six alinement bolts (10) to 5 INCH-POUNDS in sequence a, b, c, d, e, and f shown in illustration.

NOTE

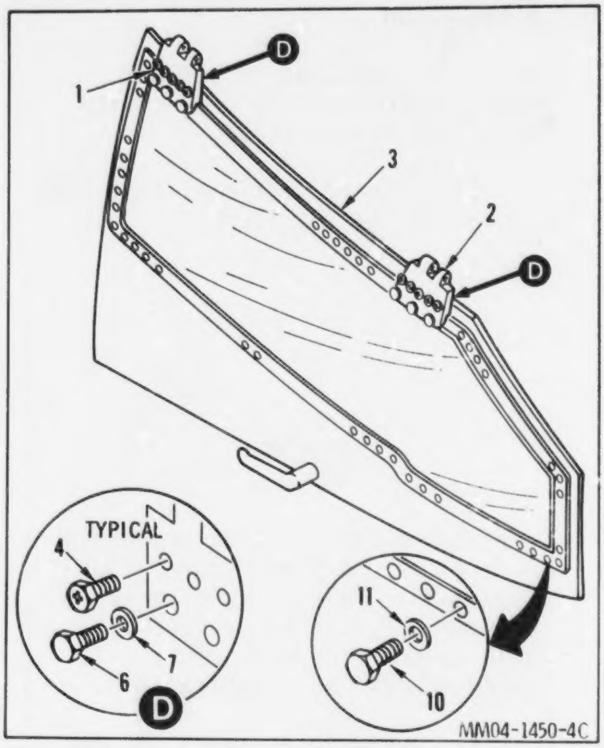
Torque sequence groups 4 and 12 require different torques in each group.

8. Torque 62 bolts (10) to 5 INCH-POUNDS and six bolts (6) to 10 INCH-POUNDS in group sequence shown in illustration.

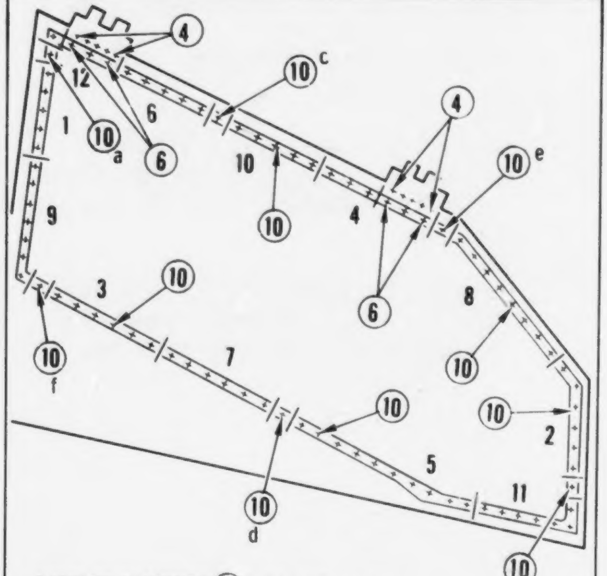
9. Torque 10 bolts (4) to 20 INCH-POUNDS.

10. Inspect (TI).

11. Install CPG door (3) (para 2-3-28).



MM04-1450-4C



CIRCLED NUMBERS ⑥ INDICATE BOLTS

TORQUE SEQUENCE CHART

MM04-1450-5A

END OF TASK

2-3-37. LEFT AFT CANOPY PANEL REMOVAL/INSTALLATION 2-3-37

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-542-4489
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

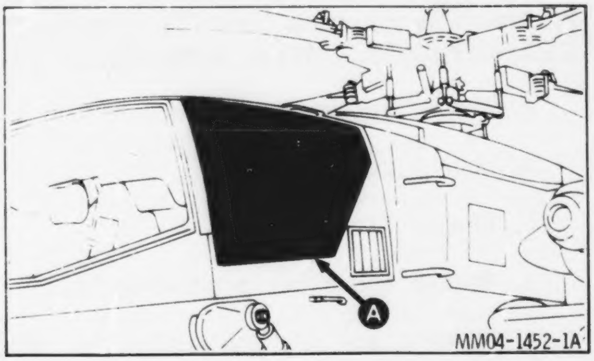
Packing
(E4) Tape, Pressure-Sensitive
(E12) Sealant, Adhesive
(E29) Lockwire
(E32) Cloth, Lint-Free

Personnel Required:

67R10	Attack Helicopter Repairer (2) One person to hold panels
67R20	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



GO TO NEXT PAGE

best copy available

2-3-37. LEFT AFT CANOPY PANEL REMOVAL/INSTALLATION (cont) 2-3-37

A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

WARNING

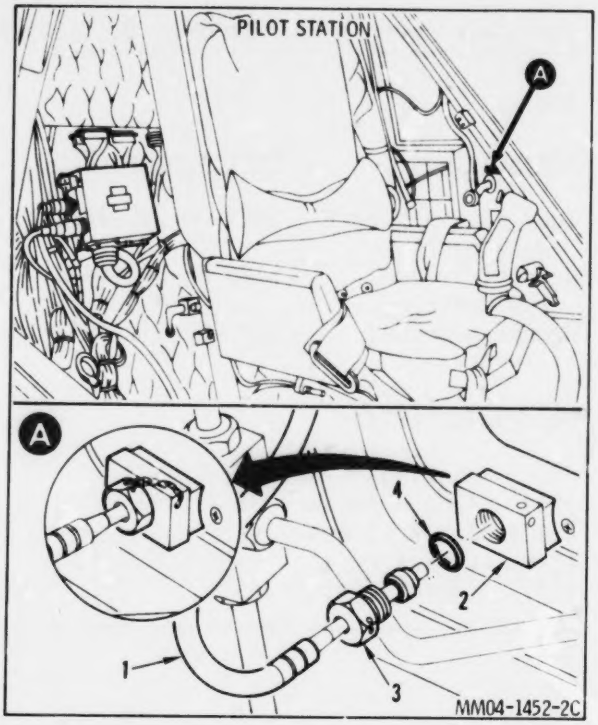
Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe personal injury. If injury occurs, seek medical aid.

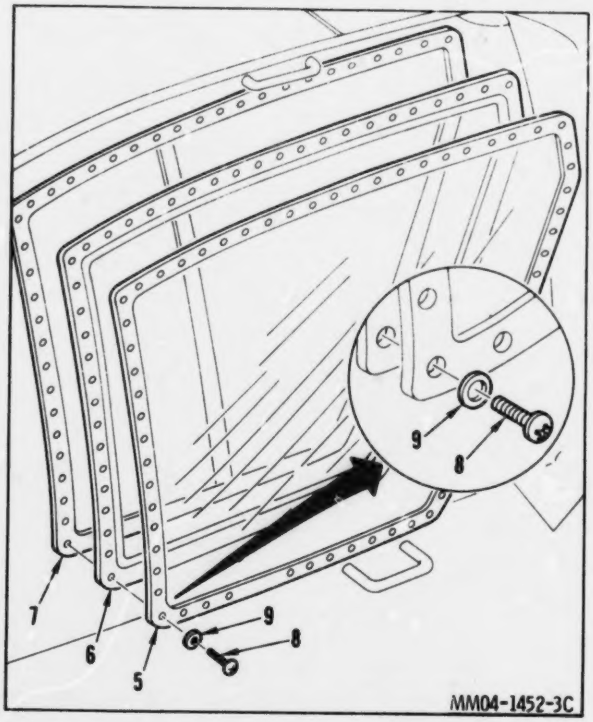
CAUTION

Remove detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

2. **Remove detonating cord (1) from severance initiation block (2).**
   a. Remove lockwire.
   b. Hold block (2).
   c. Remove fitting (3).
   d. Remove and discard packing (4).
   e. Cover block (2) and cord (1). Use clean, lint-free cloth (E32) and pressure-sensitive tape (E4).

3. **Remove window panel (5) and severance assembly (6) from canopy panel frame (7).**
   a. One person support window panel (5) during removal.
   b. Remove 67 screws (8) and washers (9).





GO TO NEXT PAGE

4. **Remove sectional seal (10) from canopy panel frame (7).** Remove five sections of seal (10) from frame (7).

B. **CLEANING**

1. **Clean adhesive residue from frame** (para 1-5-36).

2. **Wipe frame and severance assembly with a clean rag.**

C. **INSPECTION**

1. **Check block and fitting for damaged threads** (para 12-6-1).

2. **Check frame for damaged screw holes** (para 2-3-2).

3. **Check panel for cracks** (para 2-3-2).

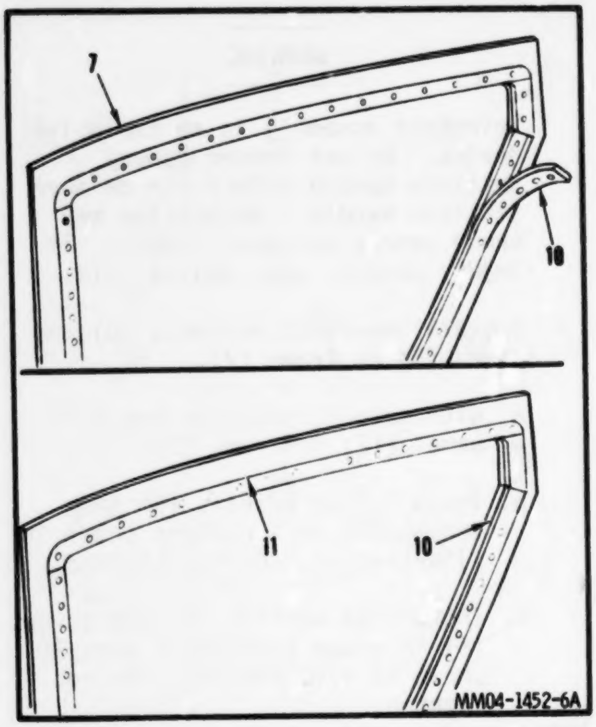
4. **Check cord for damage.** Any break requires replacement.

5. **Check severance assembly and frame for corrosion** (para 1-5-38).

D. **INSTALLATION**

1. **Apply 1/8-inch bead of sealant around perimeter of window cavity (11).** Use sealant (E12).

2. **Install seal (10) in window cavity (11)** (para 2-3-70).



GO TO NEXT PAGE

2-3-37. LEFT AFT CANOPY PANEL REMOVAL/INSTALLATION (cont) 2-3-37

WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe personal injury. If injury occurs, seek medical aid.

3. **Install severance assembly (6) and panel (5) in frame (7).**

   a. With helper, position and hold panel (12) in frame (7).

   b. Install five washers (9) and screws (8) in locations shown in illustration. Do not tighten.

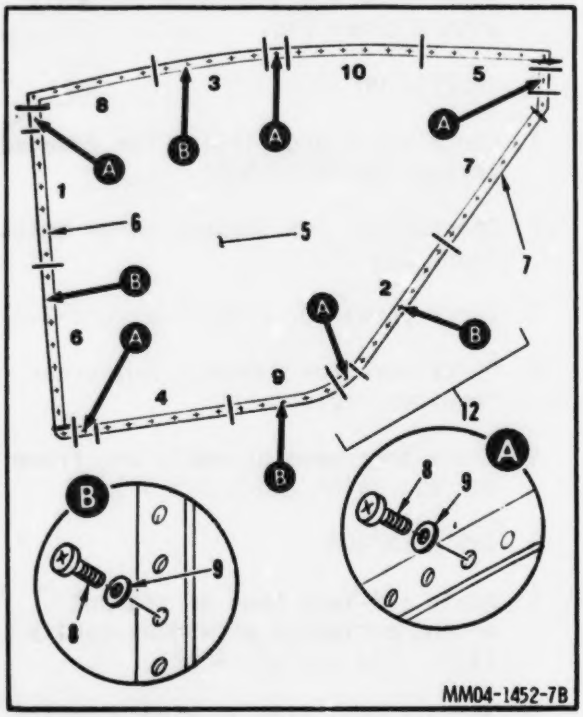
   c. Install 62 washers (9) and screws (8) in group sequence 1 thru 10 shown in illustration. Do not tighten.

   d. Tighten five alinement screws (8), in locations shown in illustration, until screws (8) are snug against washers (9).

   e. Tighten 62 screws (8), in group sequence 1 thru 10 shown in illustration, until screws (8) are snug against washers (9) and panel (12) is in complete contact with frame (7).

4. **Torque five screws (8) to 5 INCH-POUNDS in locations shown in illustration.** Use 1/4 drive torque wrench (0-30 in.-lb).

5. **Torque 62 screws (8) to 5 INCH-POUNDS in group sequence 1 thru 10 shown in illustration.** Use 1/4 drive torque wrench (0-30 in.-lb).



MM04-1452-7B

GO TO NEXT PAGE

6. **Enter CPG station** (para 1-7-1). **Observe all safety precautions.**

WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe personal injury. If injury occurs, seek medical aid.

CAUTION

Install detonating cord with care. Do not twist cord or damage booster cup on end of cord. Damage to cord or cup may affect performance of severance assembly.

7. **Install cord (1) on block (2).**

   a. Install fitting (3).

   b. Install new packing (4) on fitting (3).

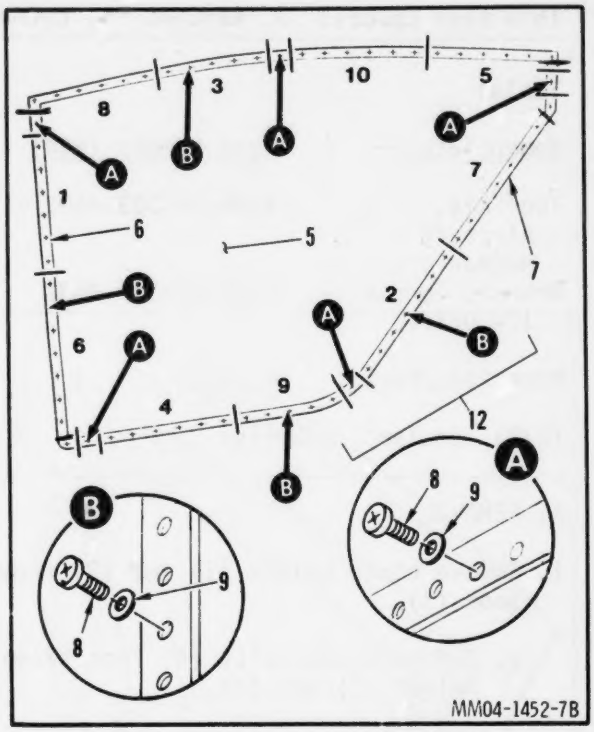
8. **Torque fitting (3) to 80 INCH-POUNDS.**

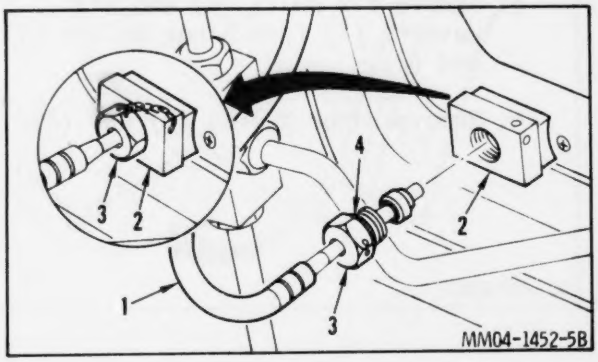
   a. Hold block (2).

   b. Torque fitting (3) to **80 INCH-POUNDS.** Use 1/4 drive torque wrench (30-150 in.-lb).

9. **Lockwire fitting (3) to block (2).** Use lockwire (E29).

10. **Inspect (TI).**





END OF TASK

2-3-38. PILOT DOOR TRANSPARENT PANEL REMOVAL/INSTALLATION 2-3-38

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

(E12) Sealant, Adhesive

Personnel Required:

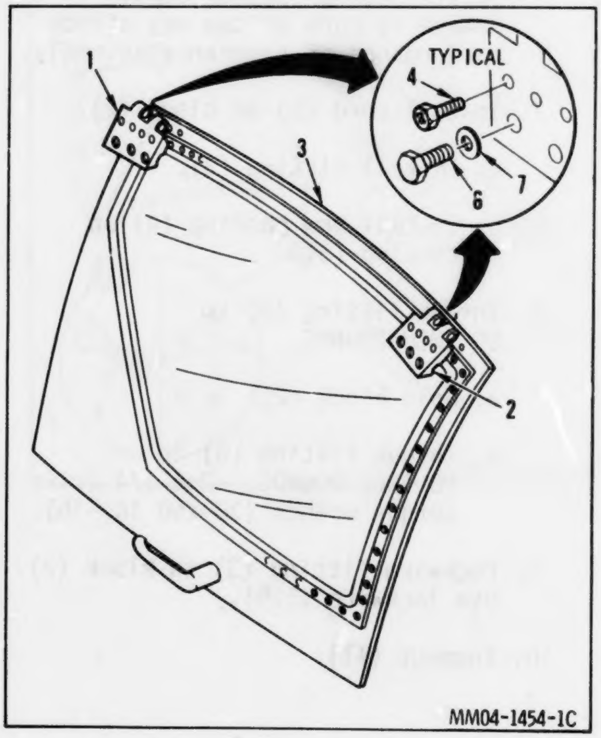
67R10	Attack Helicopter Repairer (2) One to assist
66R20	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-22	Pilot door removed

A. REMOVAL

1. **Remove hinge halves (1) and (2) from door (3).**
   a. Remove eight bolts (4) from hinge halves (1) and (2).
   b. Remove six bolts (6) and six washers (7) from hinge halves (1) and (2).
   c. Remove hinge halves (1) and (2).



GO TO NEXT PAGE

WARNING

Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe personal injury. If injury occurs, seek medical aid.

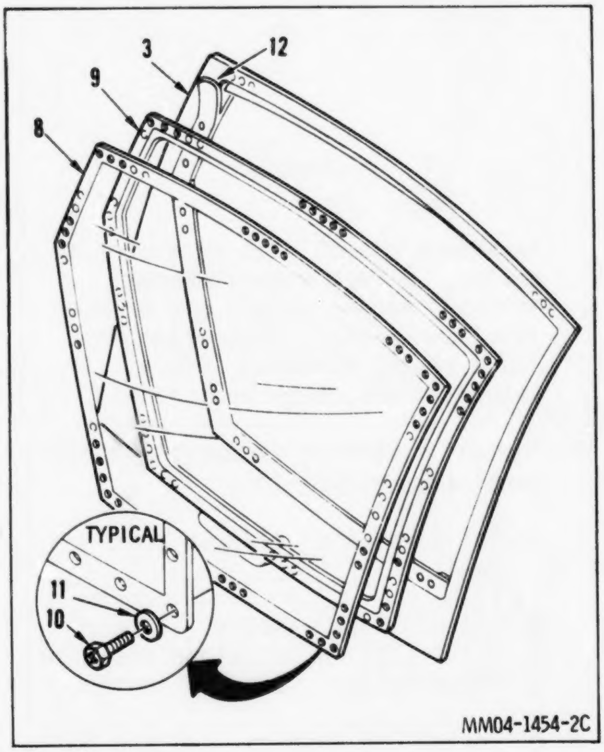
2. **Remove transparent panel (8) and severance assembly (9) from door (3).**

   a. Remove 59 bolts (10) and washers (11) from door (3).

   b. Remove panel (8) and severance assembly (9) from door (3).

   c. Separate severance assembly (9) from panel (8).

3. **Remove sectional seal (12) from door (3).** Remove four sections of seal (12) from door (3).



B. **CLEANING**

1. **Clean adhesive residue from door** (para 1-5-36).

2. **Wipe door and severance assembly with a clean rag.**

C. **INSPECTION**

1. **Check door and severance assembly for cracks** (para 12-6-1).

2. **Check door and severance assembly for corrosion** (para 1-5-38).

3. **Check door for damaged screw holes** (para 2-3-2).

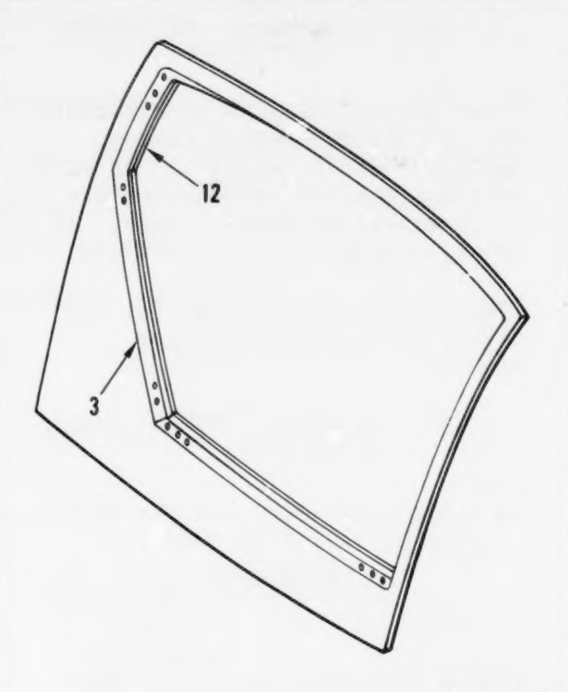
GO TO NEXT PAGE

2-3-38. PILOT DOOR TRANSPARENT PANEL REMOVAL/INSTALLATION (cont) 2-3-38

D. INSTALLATION

1. Apply 1/8-inch wide bead of adhesive sealant around door cavity (3). Use sealant (E12).

2. Install seal (12) in door cavity (3) (para 2-3-70).



MM04-1454-6A

WARNING

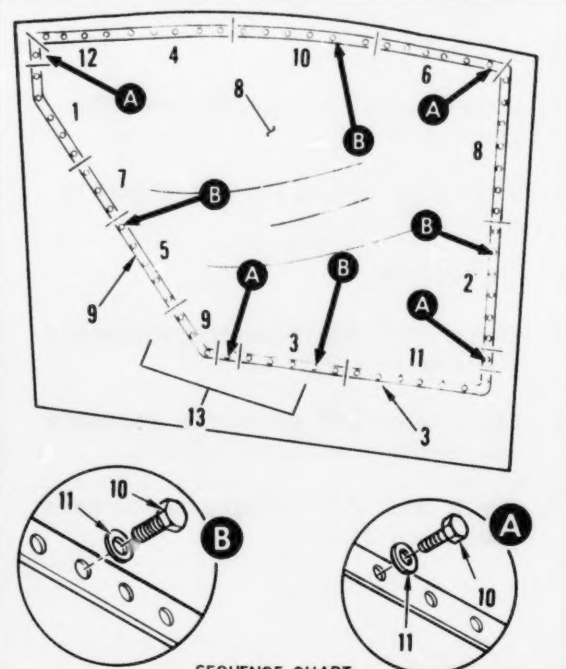
Severance assembly is an explosive device. Do not remove canopy jettison handle safety pin or move jettison handle. Detonation may cause severe personal injury. If injury occurs, seek medical aid.

3. Install severance assembly (9) and panel (8) on door (3).

   a. Position panel (13) in door cavity (3).

   b. Install four washers (11) and bolts (10) in locations shown in illustration. Do not tighten.

   c. Install 55 washers (11) and bolts (10) in group sequence shown in illustration. Do not tighten.



SEQUENCE CHART

MM04-1454-7B

GO TO NEXT PAGE

2-3-38. PILOT DOOR TRANSPARENT PANEL REMOVAL/INSTALLATION (cont) 2-3-38

4. **Install hinge halves (1) and (2) on door (3).**

   a. Aline hinge halves (1) and (2) to attachment points on door (3).

   b. Install eight bolts (4). Do not tighten.

   c. Install six washers (7) and bolts (6). Do not tighten.

5. **Tighten four bolts (10) in sequence a, b, c, d shown in illustration, until bolts (10) are snug against washers (11).**

6. **Tighten 55 bolts (10), in group sequence shown in illustration, until bolts (10) are snug against washers (11).**

7. **Torque four alinement bolts (10) to 5 INCH-POUNDS in sequence a, b, c, d shown in illustration.**

NOTE

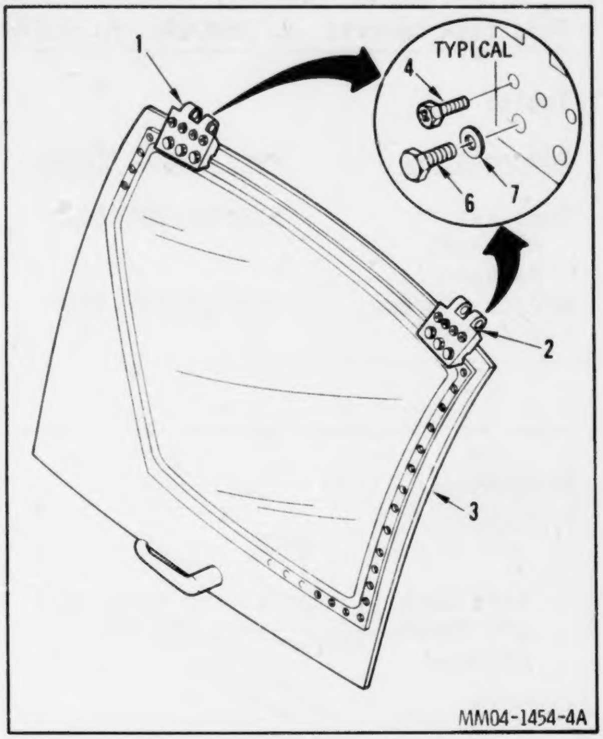
Torque sequence groups 6 and 12 require different torques in each group.

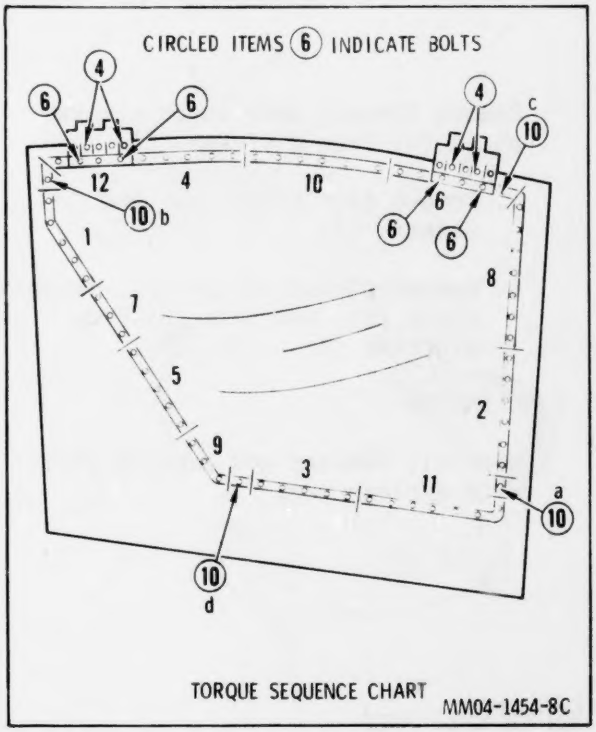
8. **Torque 55 bolts (10) to 5 INCH-POUNDS. Torque six bolts (6) to 10 INCH-POUNDS in group sequences shown in illustration.**

9. **Torque eight bolts (4) to 20 INCH-POUNDS.**

10. **Inspect (TI).**

11. **Install pilot door (3)** (para 2-3-21).





TORQUE SEQUENCE CHART

END OF TASK

2-3-39. FORWARD DOOR LATCH STRIKER PLATE REMOVAL/INSTALLATION 2-3-39

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

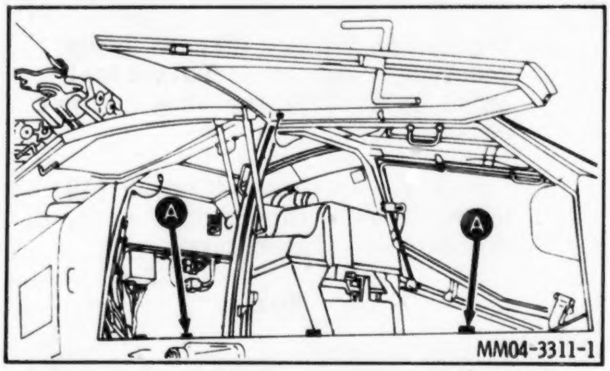
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-1	Pilot or CPG door opened

A. REMOVAL

NOTE

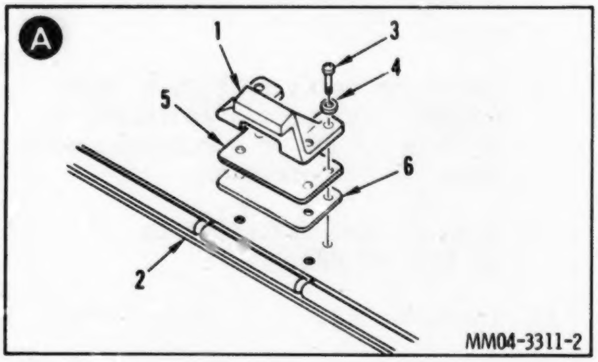
This task is typical for pilot and CPG forward door latch striker plates.



Remove forward door latch striker plate (1) from airframe (2).

a. Remove four screws (3) and washers (4).

b. Remove striker plate (1), latching plate (5), and shim (6) from airframe (2).



B. CLEANING

Wipe all removed and exposed parts with a clean rag.

GO TO NEXT PAGE

2-3-39. FORWARD DOOR LATCH STRIKER PLATE REMOVAL/INSTALLATION (cont) 2-3-39

C. INSPECTION

Check all removed and exposed parts for:

a. Cracks. None allowed.

b. Corrosion (para 1-5-38).

D. INSTALLATION

NOTE

This task is typical for pilot and CPG forward door latch striker plates.

1. **Install forward door latch striker plate (1) on airframe (2).**

   a. Aline mounting holes of shim (6), latching plate (5), and striker plate (1) with holes in airframe (2).

   b. Install four washers (4) and screws (3).

2. **Enter pilot/CPG station (para 1-7-1). Observe all safety precautions.**

3. **Adjust forward and aft door latch striker plates (1) and (7).**

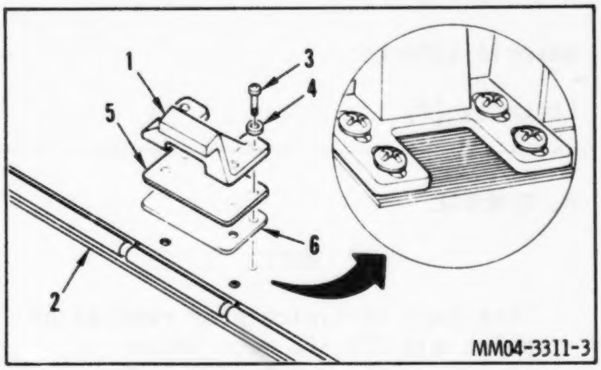
   a. Loosen four screws (3) and screws (8) on striker plates (1) and (7).

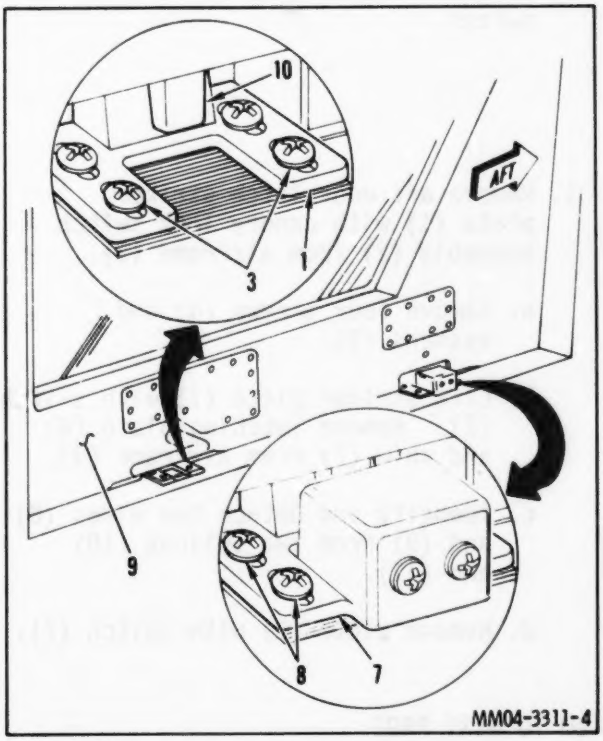
   b. Hold door (9) closed.

   c. Position two striker plates (1) and (7) against door locking bars (10).

4. **Torque four screws (3) and screws (8) to 20 INCH-POUNDS.**

5. **Inspect (TI).**





END OF TASK

2-3-40. AFT DOOR LATCH STRIKER PLATE AND CANOPY LOCK SWITCH REMOVAL/INSTALLATION 2-3-40

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Tool Kit, Electrical Repairer's	5180-00-323-4915
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

Locknuts (2)

Personnel Required:

67R10	Attack Helicopter Repairer
68F10	Aircraft Electrician
66R30	Inspector/Supervisor

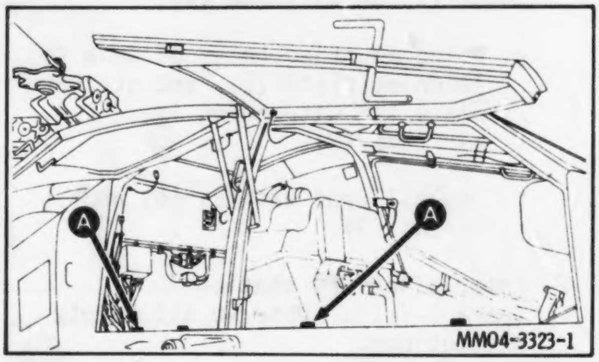
Equipment Conditions:

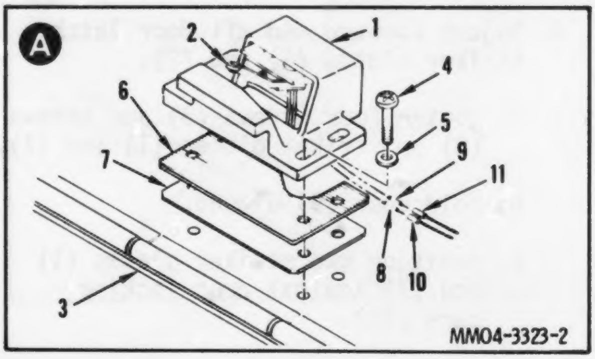
Ref	Condition
1-7-2	Helicopter safed
1-7-1	Pilot or CPG door opened

A. REMOVAL

NOTE

This task is typical for removal of pilot and CPG aft door latch striker plate and canopy lock switch.





1. **Remove aft door latch striker plate (1) with canopy lock switch assembly (2) from airframe (3).**

   a. Remove four screws (4) and washers (5).

   b. Lift striker plate (1) with switch (2). Remove latching plate (6) and shim (7) from airframe (3).

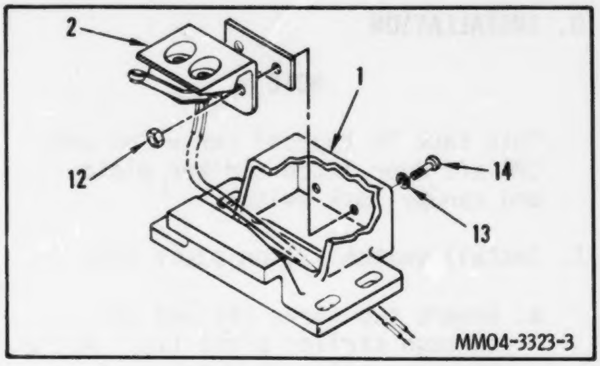
   c. Identify and detach two wires (8) and (9) from two splices (10) and (11).

   d. Remove plate (1) with switch (2).

GO TO NEXT PAGE

2-3-40. AFT DOOR LATCH STRIKER PLATE AND CANOPY LOCK SWITCH REMOVAL/INSTALLATION (cont) 2-3-40

2. Remove switch (2) from aft plate (1).



   a. Remove two locknuts (12), two washers (13), and two screws (14).

   b. Remove switch (2) from striker plate (1).

   c. Discard locknuts (12).

B. CLEANING

Wipe all removed and exposed parts with a clean rag.

C. INSPECTION

1. Check aft door latch striker plate, airframe, latching plate, and shim for:

   a. Cracks, nicks, and gouges (para 2-3-1).

   b. Corrosion (para 1-5-38).

2. Check canopy lock switch for:

   a. Cracked bracket, burned contacts, and chafed wires. None allowed.

   b. Corrosion (para 1-5-38).

GO TO NEXT PAGE

2-3-40. AFT DOOR LATCH STRIKER PLATE AND CANOPY LOCK SWITCH REMOVAL/INSTALLATION (cont) 2-3-40

D. INSTALLATION

NOTE

This task is typical for pilot and CPG aft door latch striker plate and canopy lock switch.

1. **Install switch (2) on plate (1).**

   a. Insert two wires (8) and (9) through striker plate (1). Aline mounting holes in bracket of switch (2) with mounting holes in plate (1).

   b. Install two washers (13), screws (14), and new locknuts (12).

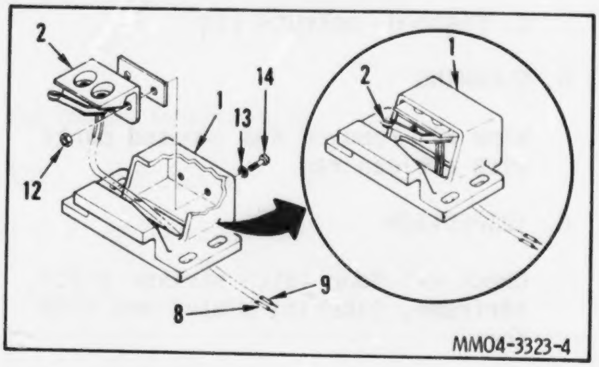
2. **Attach wire (8) to splice (10).** Remove identification.

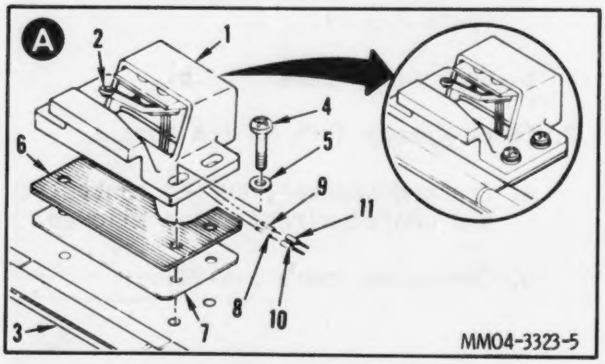
3. **Attach wire (9) to splice (11).** Remove identification.

4. **Install aft plate (1) with switch (2) on airframe (3).**

   a. Aline shim (7), plate (6), and plate (1) with airframe (3).

   b. Install four washers (5) and screws (4).





GO TO NEXT PAGE

2-3-40. AFT DOOR LATCH STRIKER PLATE AND CANOPY LOCK SWITCH REMOVAL/INSTALLATION (cont) 2-3-40

5. **Enter pilot/CPG station (para 1-7-1). Observe all safety precautions.**

6. **Adjust plates (1) and (15).**

   a. Loosen four screws (4) and four screws (16) on plates (1) and (15).

   b. Hold door (17) closed.

   c. Position two plates (1) and (15) against door locking bars (18).

7. **Torque four screws (4) and four screws (16) to 20 INCH-POUNDS.**

8. **Inspect (TI).**

END OF TASK

2-3-41. COCKPIT SEALING 2-3-41

This task covers: A. CLEANING B. TRANSPARENT PANEL SEALING C. CANOPY DOOR AREA SEALING D. FILLET SEALING E. VOID, GAP, AND JOGGLE SEALING F. TAPE SEALING

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Apron, Impermeable	8415-00-082-6108
Gloves	1680-01-194-9799
Goggles	8415-00-266-8677
Respirator, Air Filtering	4240-00-022-2524

Materials/Parts:

(E1)	Solvent
(E12)	Sealant, Adhesive
(E22)	Methyl Ethyl Ketone (MEK)
(E28)	Compound, Sealing
(E32)	Cloth, Lint-Free
(E62)	Tape, Pressure-Sensitive

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. CLEANING

WARNING

Solvent and methyl ethyl ketone (MEK) are flammable and toxic. Use in well-ventilated area away from open flames. If solvent or MEK comes in contact with eyes or skin, flush with water. If injury occurs, seek medical aid.

Clean area to be sealed with solvent (E23) and clean, lint-free cloth (TM 55-1500-204-25/1). Use solvent (E1) and MEK (E23), and lint-free cloth (E32). Wear apron, gloves, goggles, and air filtering respirator.

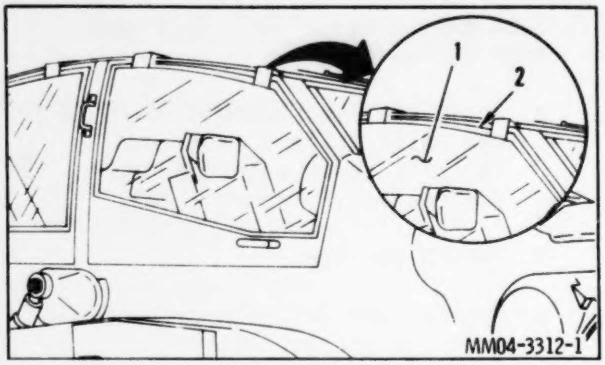
GO TO NEXT PAGE

NOTE

Perform subparagraphs B, C, D, E, and/or F as required to seal leaks in the cockpit area.

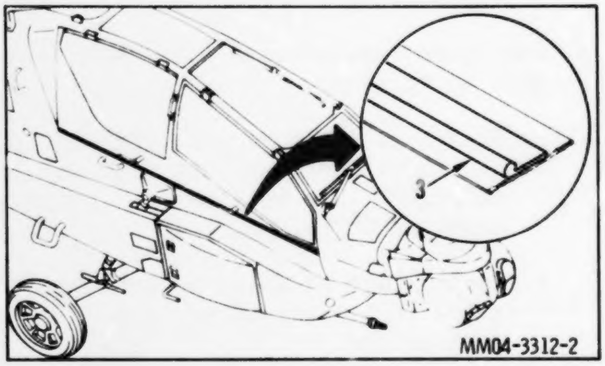
B. TRANSPARENT PANEL SEALING

1. **Apply a bead of sealing compound along edge of transparent panel (1) and structure (2).** Use sealing compound (E28).
2. **Remove excess sealant (E28).**
3. Inspect (TI).



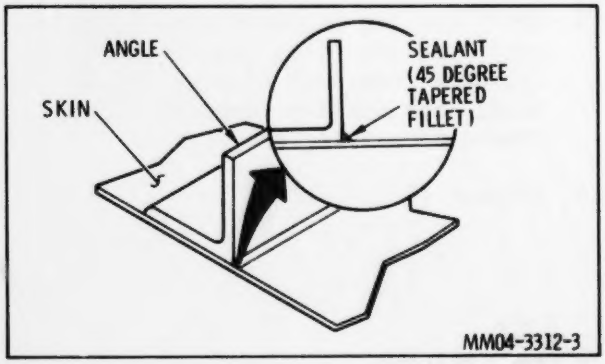
C. CANOPY DOOR AREA SEALING

1. **Adjust inboard striker plates** (para 2-3-39).
2. **If leakage persists, apply sealing compound to bumper (3) for added compression.** Use sealing compound (E28).
   a. Apply sealant to bumper (3) until adequate seal compression is obtained. Use sealant (E12).
   b. Sealant must be smooth and faired out gradually at ends.
3. **Inspect (TI).**



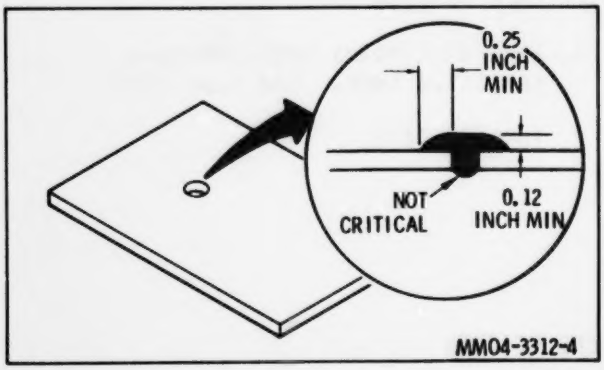
D. **FILLET SEALING**

1. **Apply a bead of sealant (E28) to form a 45-degree tapered fillet.** Remove excess sealant.
2. **Inspect (TI).**



E. **VOID, GAP, AND JOGGLE SEALING**

1. **Apply sealing compound to void to form dome-shaped retainer overlapping at edges.** Use sealing compound (E28).
2. **Inspect (TI).**



GO TO NEXT PAGE

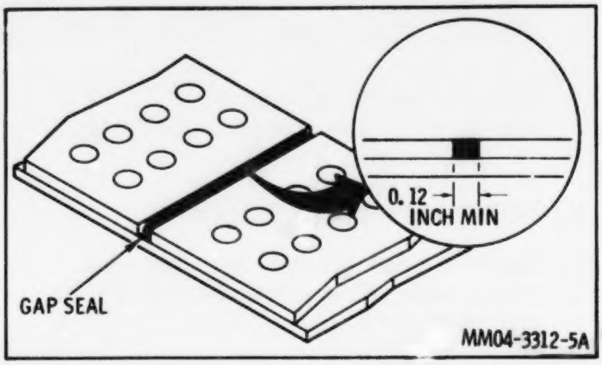
2-3-41. COCKPIT SEALING (cont)

3. Seal gaps greater than 0.12 inch wide as follows:

a. Apply sealing compound (E28) to gap until sealant protrudes slightly above edges of seams. Use sealing compound (E28).

b. Smooth surface.

c. Verify that no voids or bubbles exist in sealant after application.

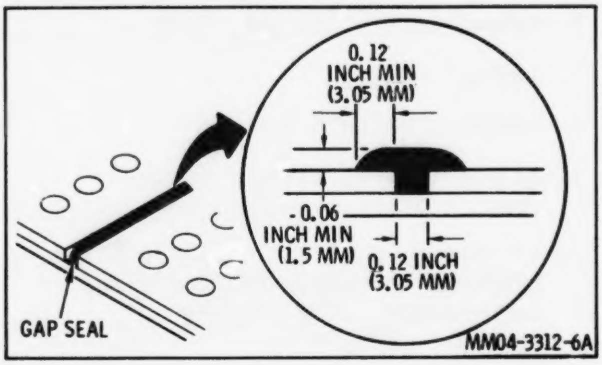


MM04-3312-5A

4. Seal gaps smaller than 0.12 inch wide as follows:

a. Apply sealing compound (E28) to gap so sealant overlaps edge of material. Use sealing compound (E28).

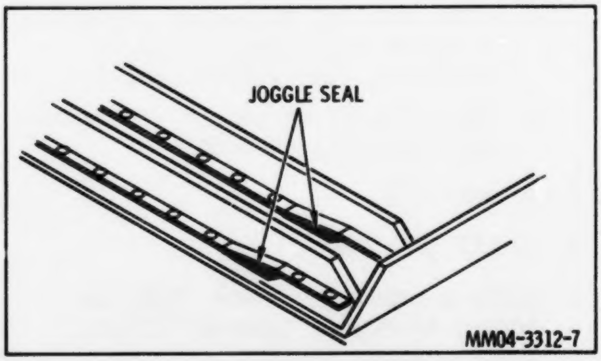
b. Verify that no voids or bubbles exist in sealant after application.



MM04-3312-6A

5. Apply sealing compound under joggle until sealant fills joggle and extrudes from each side of joggle area. Use sealing compound (E28). Remove excess sealant.

6. Inspect (TI).

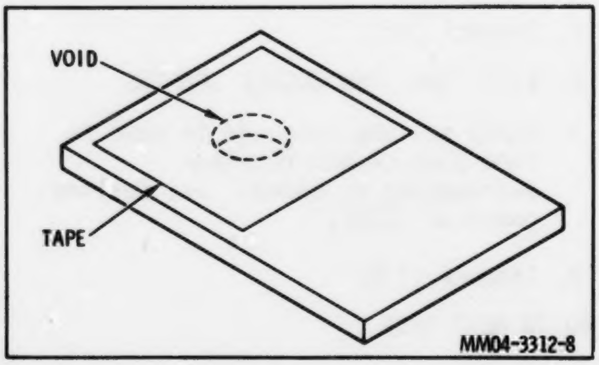


MM04-3312-7

F. TAPE SEALING

1. Tape over voids with pressure-sensitive tape. Use tape (E62).

2. Inspect (TI).



MM04-3312-8

END OF TASK

2-3-42. LEFT VERTICAL GLARESHIELD REMOVAL/INSTALLATION 2-3-42

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Equipment Conditions:

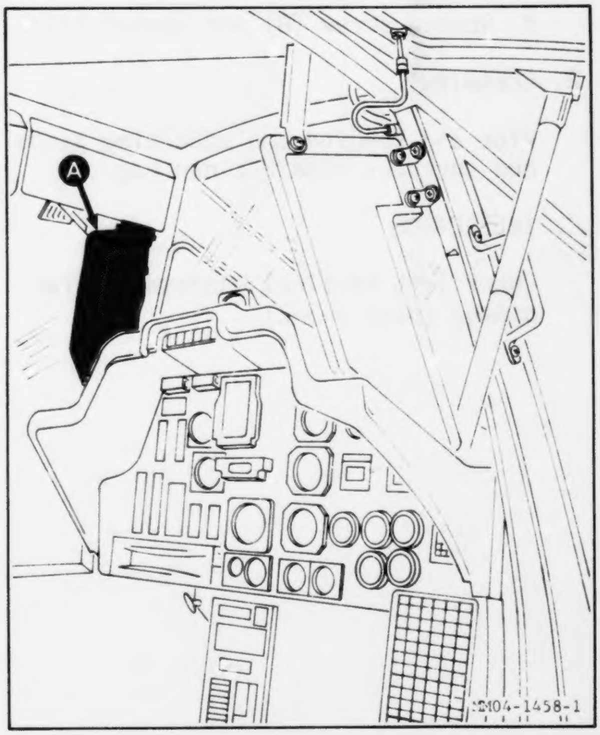
Ref	Condition
1-7-2	Helicopter safed

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**



GO TO NEXT PAGE

2-3-42. LEFT VERTICAL GLARESHIELD REMOVAL/INSTALLATION (cont) 2-3-42

2. **Remove left vertical glareshield (1) from three clips (2).**

   a. Hold two screws (3).

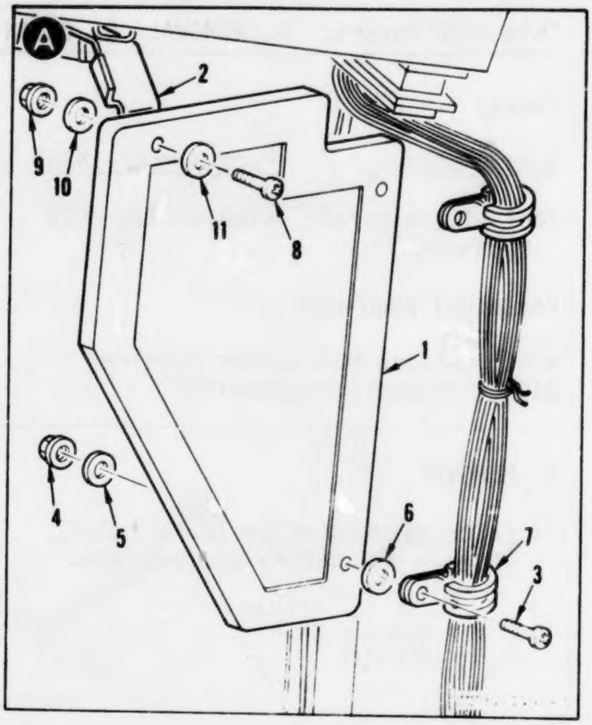
   b. Remove two nuts (4) and two washers (5).

   c. Remove two screws (3), two washers (6), and two wire harness clamps (7).

   d. Hold screw (8).

   e. Remove nut (9) and washer (10).

   f. Remove screw (8) and washer (11).



B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

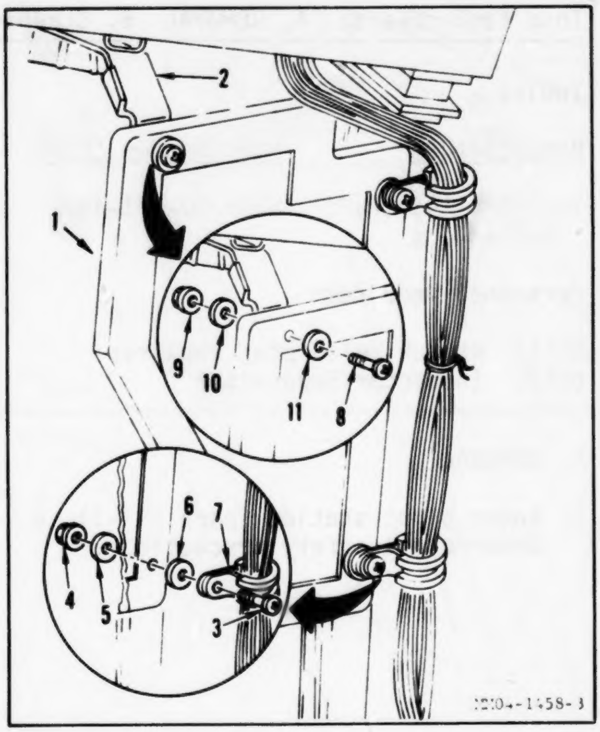
C. INSPECTION

Check left vertical glareshield for damage (para 2-3-2).

GO TO NEXT PAGE

2-3-42. LEFT VERTICAL GLARESHIELD REMOVAL/INSTALLATION (cont) 2-3-42

D. INSTALLATION



1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**
2. **Install left vertical glareshield (1) on three clips (2).**
   a. Insert two screws (3) through two wire harness clamps (7).
   b. Install two washers (6) on two screws (3).
   c. Insert two screws (3) through glareshield (1) and two clips (2).
   d. Install two washers (5) and nuts (4) on two screws (3).
   e. Insert screw (8) through washer (11), glareshield (1), and clip (2).
   f. Install washer (10) and nut (9) on screw (8).
   g. Hold nut (9). Tighten screw (8).
   h. Hold nut (4). Tighten screw (3) (two places).
3. **Inspect (TI).**

END OF TASK

2-3-43. RIGHT VERTICAL GLARESHIELD REMOVAL/INSTALLATION 2-3-43

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

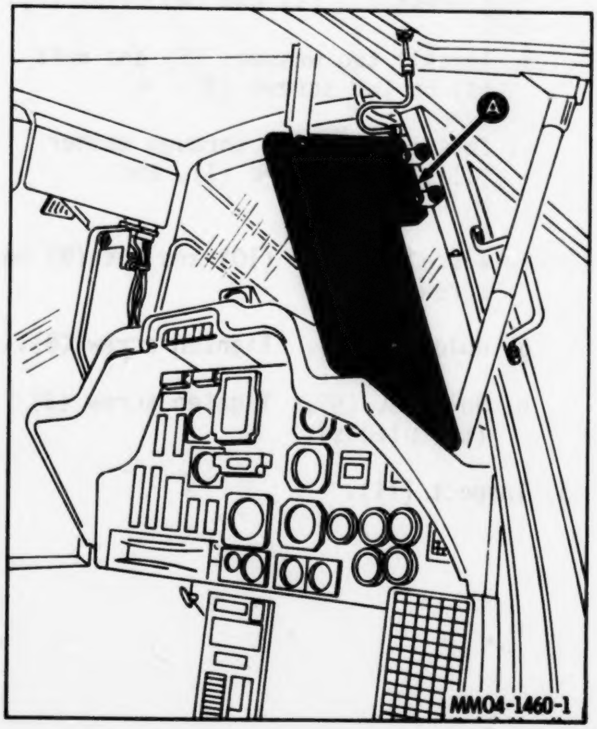
67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

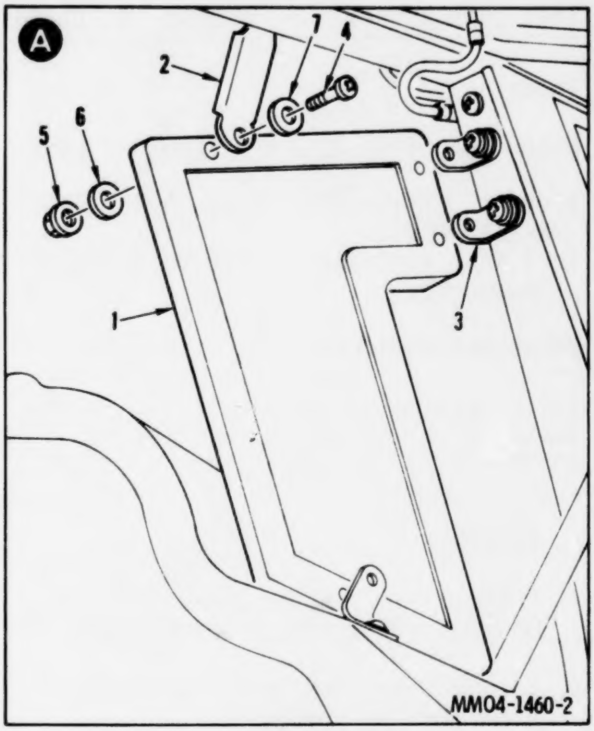
1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**



GO TO NEXT PAGE

2-3-43. RIGHT VERTICAL GLARESHIELD REMOVAL/INSTALLATION (cont) 2-3-43

2. **Remove right vertical glareshield (1) from four clips (2) and (3).**
   a. Hold screw (4).
   b. Remove four nuts (5) and washers (6).
   c. Remove four screws (4) and washers (7).



B. CLEANING

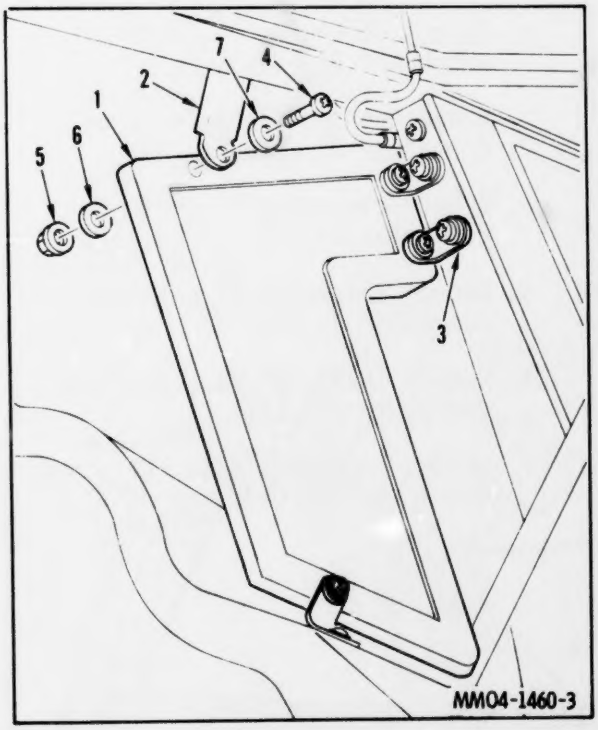
Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

Check right vertical glareshield for damage (para 2-3-2).

D. INSTALLATION

1. **Install glareshield (1) on four clips (2) and (3).**
   a. Insert four screws (4) through washers (7), clips (2), and (3), and shield (1).
   b. Hold screws (4).
   c. Install four washers (6) and nuts (5) on screws (4).
2. **Inspect (TI).**



END OF TASK

2-3-44. ELECTRICAL POWER DISTRIBUTION BOX COVER REMOVAL/INSTALLATION 2-3-44

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Electrical Repairer's	5180-00-323-4915
Tool Kit, Airframe Repairer's	5180-00-323-4876

Personnel Required:

68F10	Aircraft Electrician
68G10	Aircraft Structural Repairer
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-12	Pilot seat tilted forward

A. REMOVAL

1. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**

2. **Detach six connectors from power distribution panel (1).**

   a. Detach connector P1 (2) from connector J1 (3).

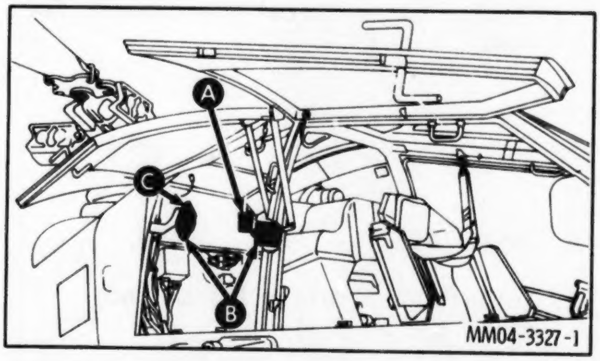
   b. Detach connector P2 (4) from connector J2 (5).

   c. Detach connector P3 (6) from connector J3 (7).

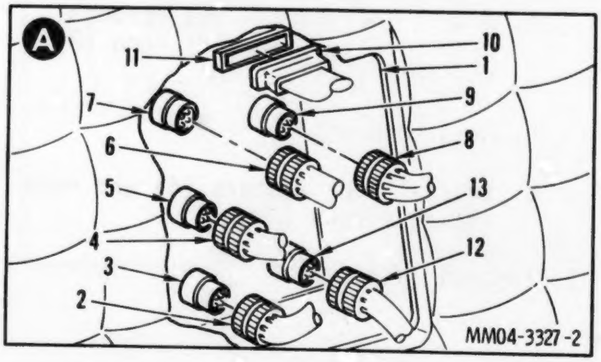
   d. Detach connector P4 (8) from connector J4 (9).

   e. Detach connector P5 (10) from connector J29 (11).

   f. Detach connector P461 (12) from connector J32 (13).



MM04-3327-1



MM04-3327-2

GO TO NEXT PAGE

2-3-44. ELECTRICAL POWER DISTRIBUTION BOX COVER REMOVAL/INSTALLATION (cont) 2-3-44

3. **Detach connector P929 (14) from connector J1 (15) on pilot left sensor surveyor unit (16).**

4. **Detach connector P927 (17) from connector J1 (18) on pilot right sensor surveyor unit (19).**

5. **Detach connector P56 (20) from connector MT31 (21) on horizontal accelerometer (22).**

6. **Detach connector P388 (23) from antenna (24).**

7. **Remove screw (25), washer (26), and clamp (27) from bracket (28).**

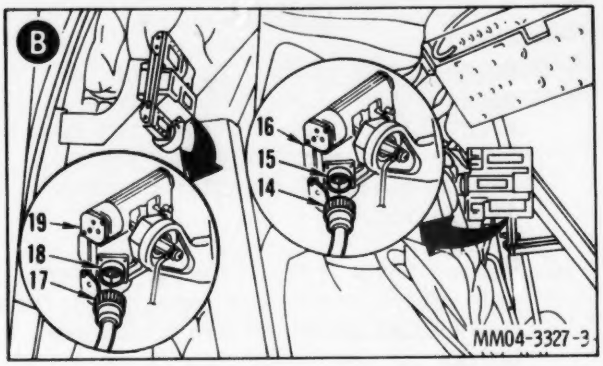
8. **Remove two screws (29), two washers (30), and two clamps (31) from pilots bulkhead (32).**

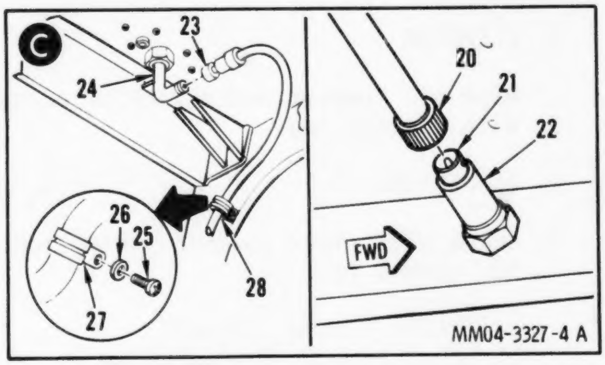
9. **Remove thermal insulation (33) from airframe (34).**

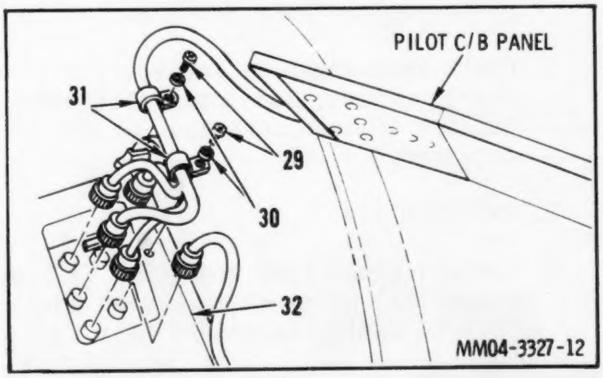
   a. Unlock hook and pile fasteners (35).

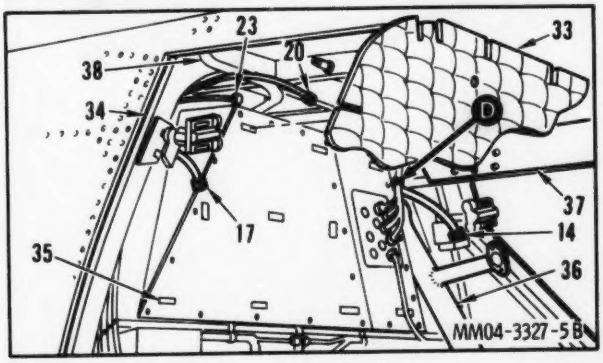
   b. Remove insulation (33) from around environmental control system duct (36) and two defog tubes (37) and (38).

   c. Slide insulation (33) off of connectors P929 (14), P927 (17), P56 (20), and P388 (23).









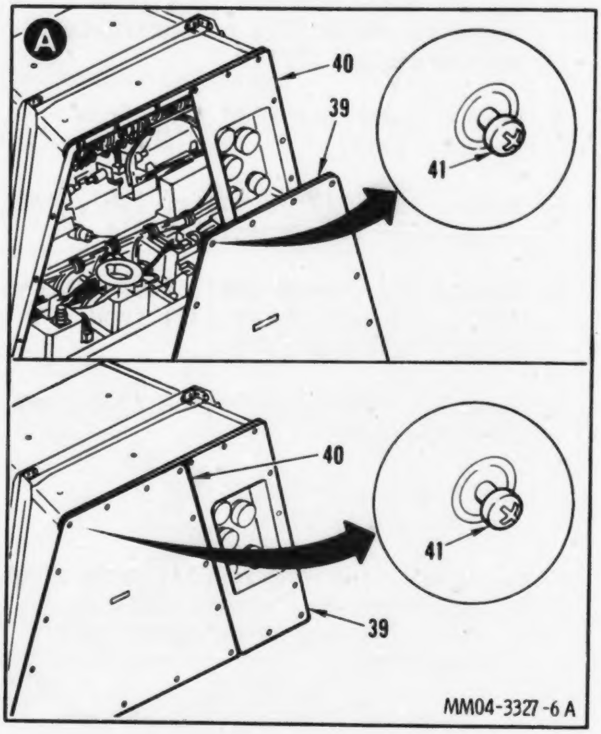
GO TO NEXT PAGE

2-3-44. ELECTRICAL POWER DISTRIBUTION BOX COVER REMOVAL/INSTALLATION (cont) 2-3-44

CAUTION

Do not lean or pull on connector panel after it is removed from electrical power distribution box. Damage to connector panel wiring could result if excessive stress is applied.

10. **Remove cover (39).** Remove but do not detach connector panel (40) from electrical power distribution box. Unlock 22 Camloc fasteners (41).



B. **CLEANING**

Wipe all removed and attaching parts with a clean rag.

C. **INSPECTION**

1. **Check electrical power distribution box covers for:**

   a. Cracks. None allowed.

   b. Corrosion (para 1-5-38).

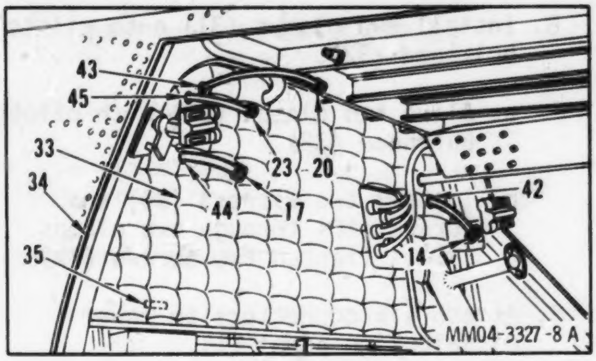
2. **Check hook-and-pile fasteners for tears, cracks, and loose attachment.** Replace if torn, cracked, or not attached.

D. **INSTALLATION**

1. **Install panel (40) and cover (39) on electrical power distribution box.** Lock 22 Camloc fasteners (41).

GO TO NEXT PAGE

2-3-44. ELECTRICAL POWER DISTRIBUTION BOX COVER REMOVAL/INSTALLATION (cont) 2-3-44



2. **Install thermal insulation (33) on airframe (34).**

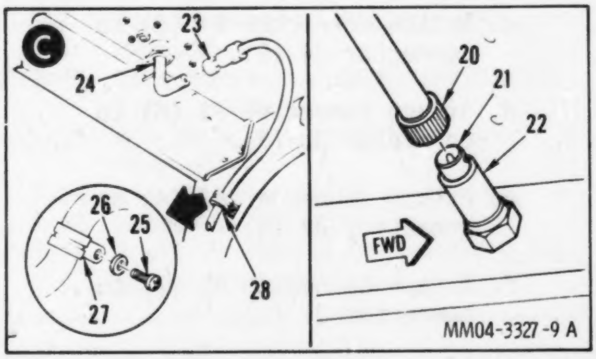
   a. Insert connector P929 (14) through cutout (42) in insulation (33).

   b. Insert connector P56 (20) through cutout (43) in insulation (33).

   c. Insert connector P927 (17) through cutout (44) in insulation (33).

   d. Insert connector P388 (23) through cutout (45) in insulation (33).

   e. Aline insulation (33) with airframe (34) and lock hook-and-pile fasteners (35).



3. **Attach connector P56 (20) to connector MT31 (21) on horizontal accelerometer (22).**

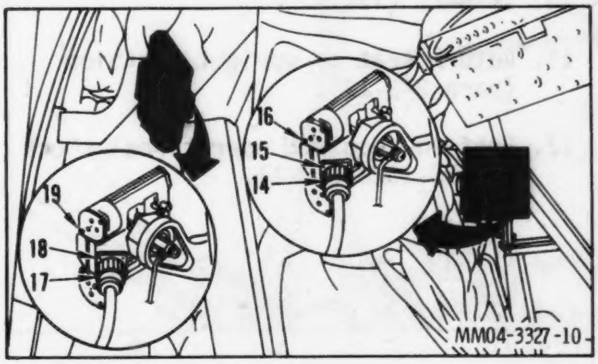
4. **Attach connector P388 (23) to antenna (24).**

5. **Install clamp (27) to bracket (28).**

   a. Install washer (26) on screw (25).

   b. Aline clamp (27) with bracket (28).

   c. Install screw (25) and washer (26) through clamp (27) and into bracket (28). Tighten screw (25).



6. **Attach connector P927 (17) to connector J1 (18) on pilot right sensor surveyor unit (19).**

7. **Attach connector P929 (14) to connector J1 (15) on pilot left sensor surveyor unit (16).**

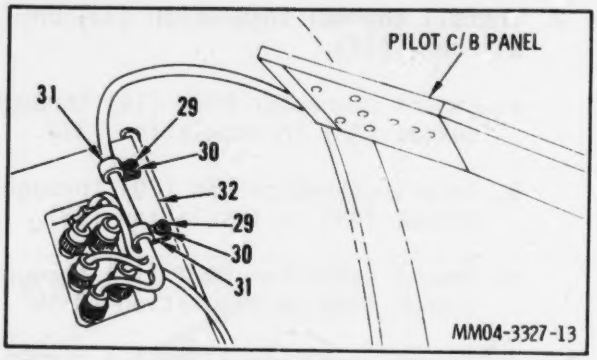
GO TO NEXT PAGE

2-3-44. ELECTRICAL POWER DISTRIBUTION BOX COVER REMOVAL/INSTALLATION (cont) 2-3-44

8. **Install two clamps (31) onto pilots bulkhead (32).**

   a. Aline two clamps (31) with pilots bulkhead (32).

   b. Install two washers (30) and screws (29) through two clamps (31). Tighten two screws (29).



9. **Attach six connectors to power distribution panel (1).**

   a. Attach connector P461 (12) to connector J32 (13).

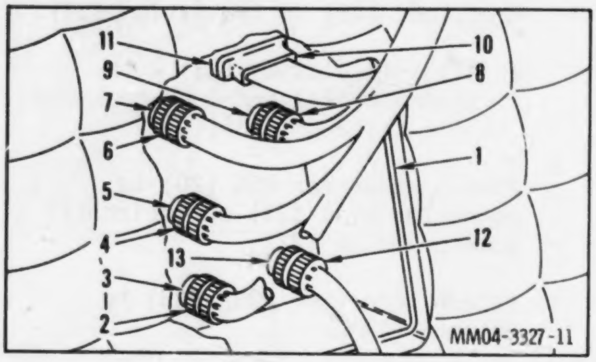
   b. Attach connector P5 (10) to connector J29 (11).

   c. Attach connector P4 (8) to connector J4 (9).

   d. Attach connector P3 (6) to connector J3 (7).

   e. Attach connector P2 (4) to connector J2 (5).

   f. Attach connector P1 (2) to connector J1 (3).



10. **Inspect (TI).**

11. **Return seat to upright position** (para 2-3-12).

12. **Perform required operational check** (TM 55-1520-238-T).

END OF TASK

2-3-45. FORWARD CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION 2-3-45

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Sling, Air Vehicle	1730-01-165-6861
Breaker Bar, Telescopic,	5120-00-490-3762
Adapter, 3/4, 1/2 Drive	5120-00-144-5207
Wrench, Torque, 3/4 Drive	5120-00-902-3550
Adapter, Socket Wrench, 1/2, 3/4 Drive	5120-00-227-8088
Wrench, Forward Mast Support	7-263-110003
Extension, 16 Inch, 3/4 Drive	5120-00-227-8079
Extension, 5 Inch, 3/4 Drive	5120-01-193-8537
Wrench, Torque, 3/8 Drive	5120-00-288-8865

Materials/Parts:

	Cotter Pin
(E29)	Lockwire

Personnel Required:

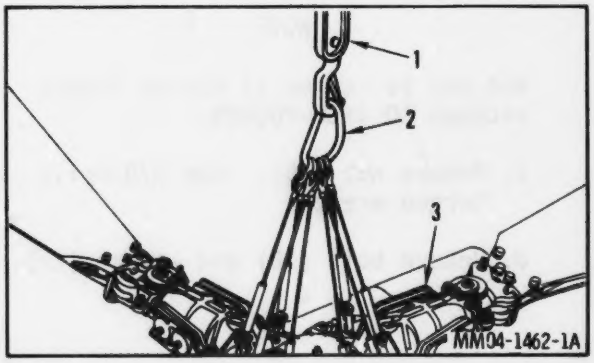
67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panels L200 and R200 removed
2-3-48	Left forward side transmission strut removed
6-3-35	Air data sensor system mast removed
1-7-24	Air vehicle sling installed
1-7-42	Maintenance crane installed
2-3-49	Right forward side transmission strut removed

A. REMOVAL

1. **Connect lifting hook (1) to air vehicle sling (2).**
2. **One person apply tension to lifting hook (1) to relieve weight of rotor head (3) from transmission struts.**



GO TO NEXT PAGE

2-3-45. FORWARD CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-45

NOTE

This task is typical for left or right forward center strut.

3. **Remove clamp(s) (5) from forward center strut (4).**

   a. Remove nut(s) (6) and washer(s) (7).

   b. Remove screw(s) (8) from clamp(s) (9) and (5).

4. **Remove forward center strut (4) from transmission deck (10).**

   a. Remove lockwire from bolt (11).

   b. Remove bolt (11) and washer (12). Use forward mast support wrench and breaker bar.

5. **Remove forward center strut (4) from rotor support mast base (13).**

   a. Remove cotter pin (14).

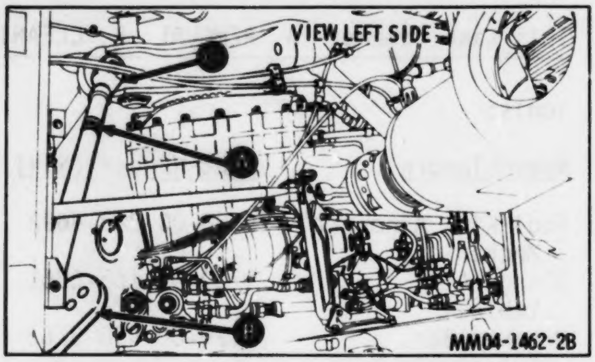
   b. Break torque on nut (15). Use breaker bar, 3/4 adapter.

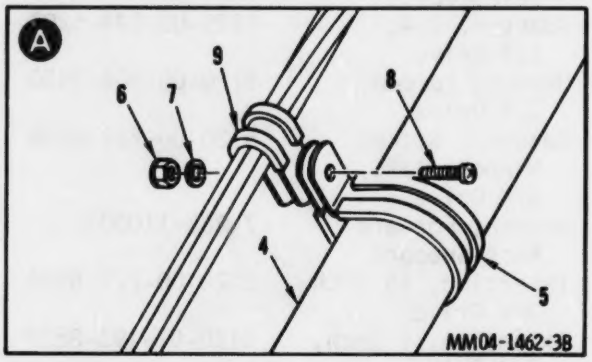
NOTE

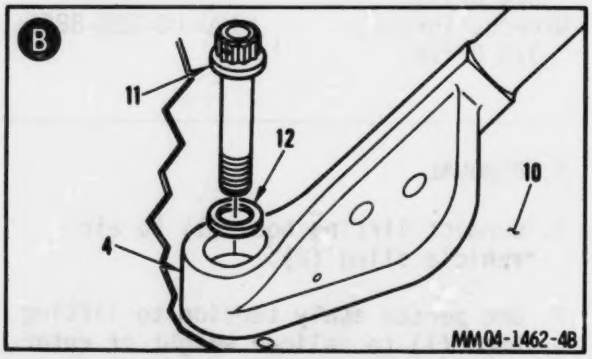
Nut may be reused if run-on torque exceeds **50 INCH-POUNDS.**

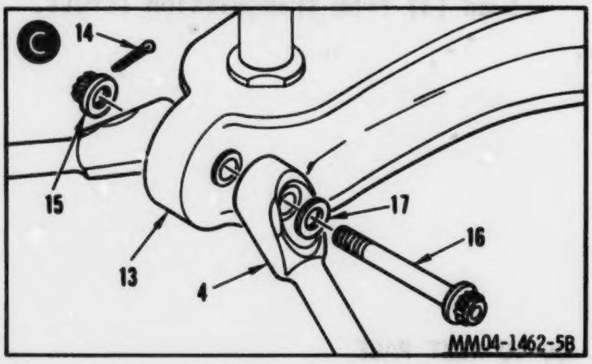
   c. Remove nut (15). Use 3/8-drive torque wrench.

   d. Remove bolt (16) and washer (17).









GO TO NEXT PAGE

B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

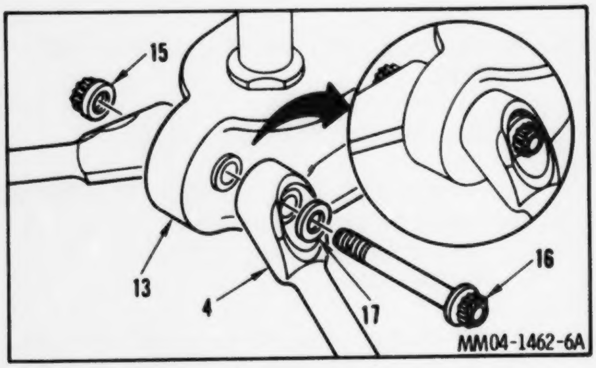
1. Check strut for damage and corrosion (para 2-3-2).
2. Check rotor support mast base (para 2-3-2).
3. Check nuts and bolts for stripped threads. None allowed.

D. INSTALLATION

NOTE

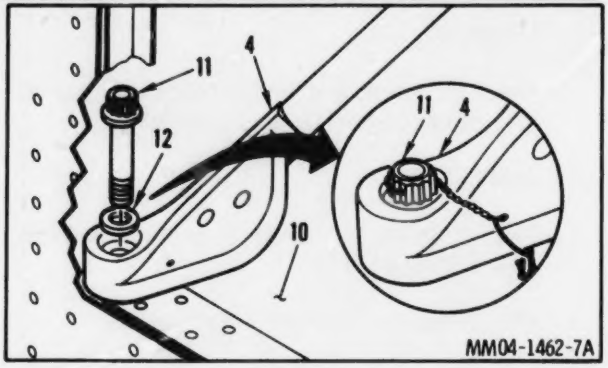
Nut may be reused if run-on torque exceeds **50 INCH-POUNDS**.

1. Install forward center transmission strut (4) on rotor support mast base (13).
   a. Insert bolt (16) through washer (17), struts (4), and base (13).
   b. Hold bolt (16). Use 15/16 socket.
   c. Put nut (15) on bolt (16) fingertight.
   d. Make sure nut (15) has not less than **50 INCH-POUNDS** run-on torque. Use 3/8-drive torque wrench.



GO TO NEXT PAGE

2-3-45. FORWARD CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-45



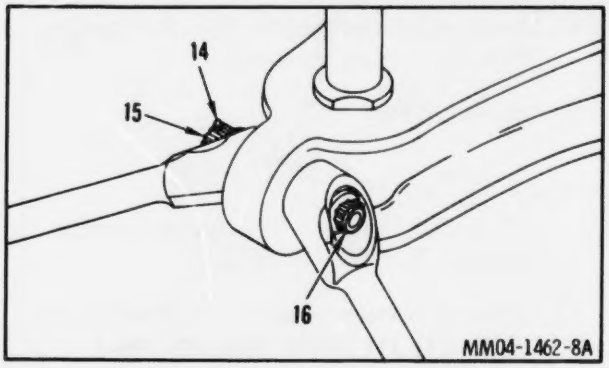
2. **Install forward center strut (4) on transmission deck (11).**

   a. Insert bolt (11) through washer (12), strut (4), into deck (10).

   b. Install bolt (11). Use 3/4 drive handle and forward mast support wrench.

3. **Torque bolt (11) to 290 FOOT-POUNDS.** Use 3/4 drive wrench and forward mast support wrench.

4. **Lockwire bolt (11) to strut (4).** Use lockwire (E29).



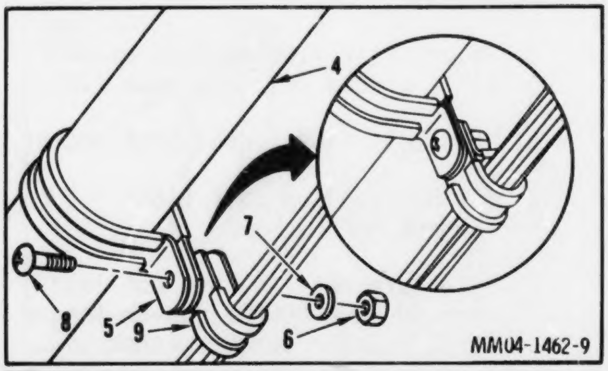
5. **Torque nut (15) to 280 to 304 FOOT-POUNDS.**

   a. One person hold bolt (16).

   b. Torque nut (15) to **280 FOOT-POUNDS.** Use 3/4 drive torque wrench; 1/2 3/4-drive adapter; and 5-inch extension.

   c. If cotter pin hole is not alined, increase torque to aline, but do not exceed **304 FOOT-POUNDS.**

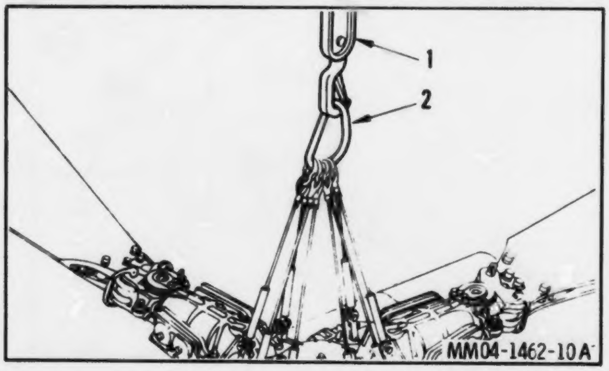
6. **Install new cotter pin (14).**



7. **Install clamp(s) (9) and (5) on strut (4).**

   a. Insert screw(s) (8) through clamp(s) (9) and (5).

   b. Install washer(s) (7) and nut(s) (6).



8. **Remove lifting hook (1) from air vehicle sling (2).**

GO TO NEXT PAGE

9. Install left forward side transmission strut (para 2-3-48).
10. Inspect (TI).
11. Remove air vehicle sling (para 1-7-24).
12. Remove maintenance crane (para 1-7-50).
13. Install air data sensor system (para 6-3-35).
14. Secure access panels L200 and R200 (para 2-2-2).

END OF TASK

2-3-46. AFT LEFT CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION 2-3-46

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Sling, Air Vehicle	1730-01-165-6861
Handle, Ratchet, 1/2 Drive	5120-00-230-6385
Breaker Bar, Telescopic, 3/4 Drive	5120-00-490-3762
Adapter, 3/4, 1/2 Drive	5120-00-144-5207
Wrench, Torque, 3/4 Drive	5120-00-902-3550
Adapter, Socket Wrench, 1/2, 3/4 Drive	5120-00-227-8088
Wrench, Aft Support Strut	7-263110002
Extension, 5-inch, 1/2 Drive	5120-00-243-7326

Materials/Parts:

	Cotter Pin
(E29)	Lockwire

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

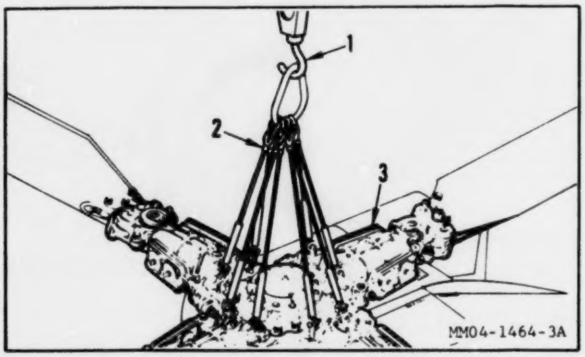
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panels T250L, T250R, T290R, and L325 opened
2-3-50	Left aft side transmission strut removed
6-3-35	Air data system mast removed
1-7-24	Air vehicle sling installed
1-7-42	Maintenance crane installed

A. REMOVAL

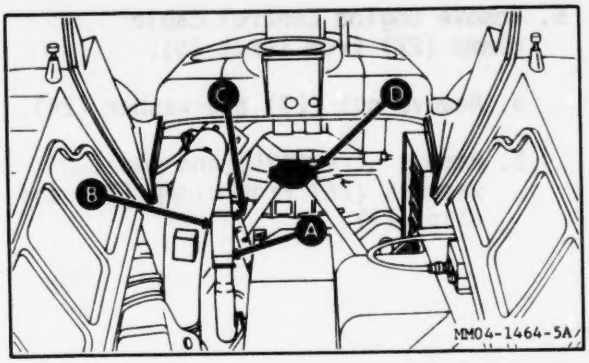
1. **Connect lifting hook (1) to air vehicle sling (2).**

2. **One person apply tension to lifting hook (1) to relieve weight of rotor head (3) from transmission struts.**



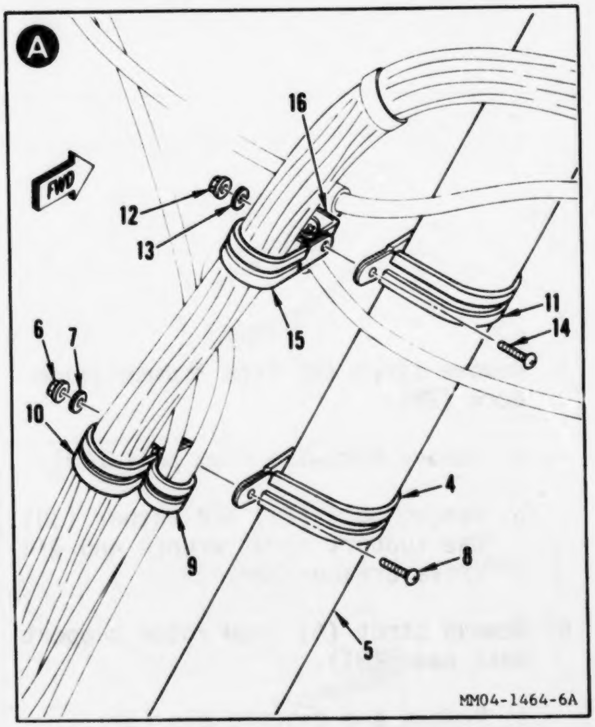
GO TO NEXT PAGE

2-3-46. AFT LEFT CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-46

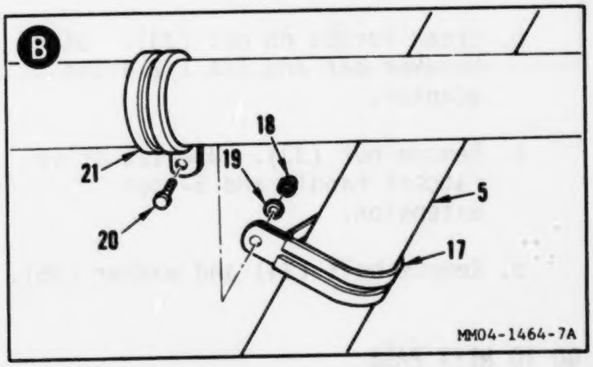


3. **Remove harness clamp (4) from aft left center transmission strut (5).**
   a. Remove nut (6) and washer (7).
   b. Remove screw (8) from clamps (4), (9), and (10).

4. **Remove harness clamp (11) from strut (5).**
   a. Remove nut (12) and washer (13).
   b. Remove screw (14) from two clamps (11) and (15) and clip (16).



5. **Remove fuel crossfeed hose clamp (17) from strut (5).**
   a. Remove nut (18) and washer (19).
   b. Remove bolt (20) from two clamps (17) and (21).



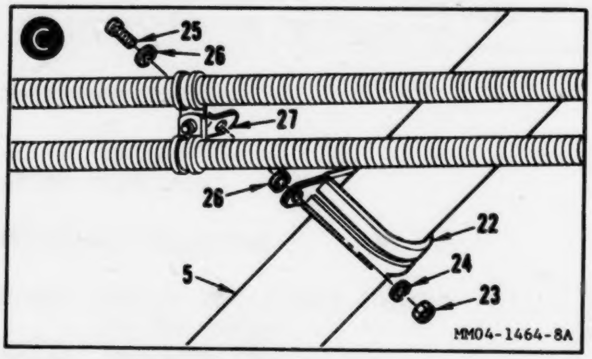
GO TO NEXT PAGE

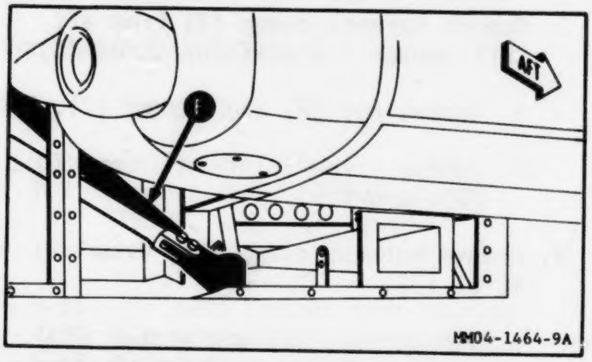
2-3-46. AFT LEFT CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-46

6. **Remove engine control cable clamp (22) from strut (5).**

   a. Remove nut (23) and washer (24).

   b. Remove screw (25) and two washers (26) from clamp (22) and clip (27).

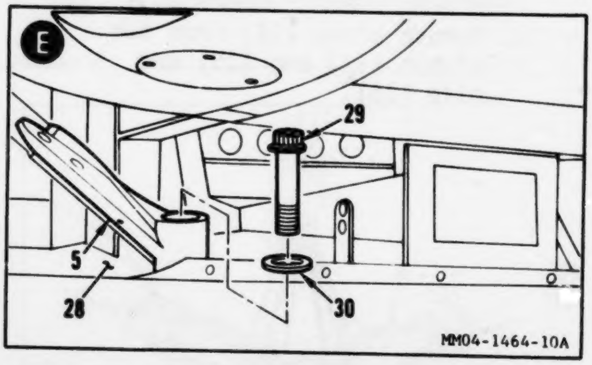




7. **Remove strut (5) from transmission deck (28).**

   a. Remove lockwire from bolt (29).

   b. Remove bolt (29) and washer (30). Use support strut wrench and 3/4 drive breaker bar.



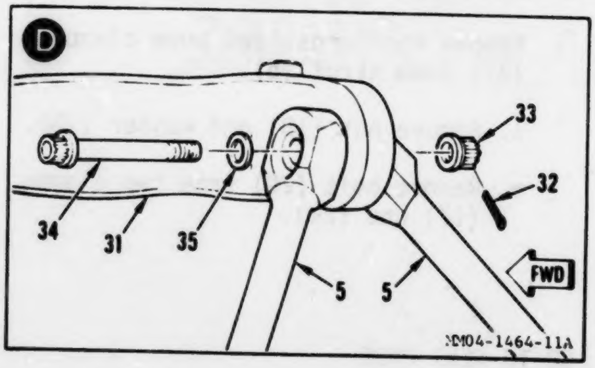
8. **Remove strut (5) from rotor support mast base (31).**

   a. Remove and discard pin (32).

   b. Break torque on nut (33). Use breaker bar and 3/4 1/2 drive adapter.

   c. Remove nut (33). Use 1/2 drive ratchet handle and 5-inch extension.

   d. Remove bolt (34) and washer (35).



GO TO NEXT PAGE

2-3-46. AFT LEFT CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-46

B. CLEANING

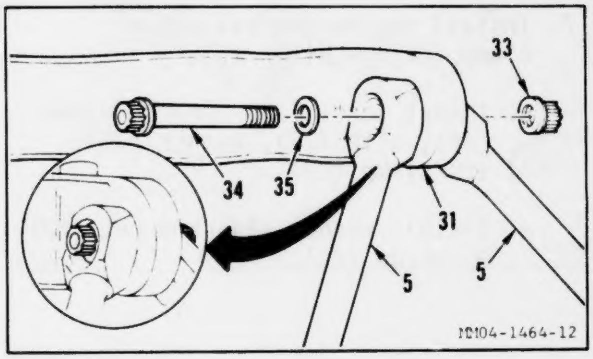
Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

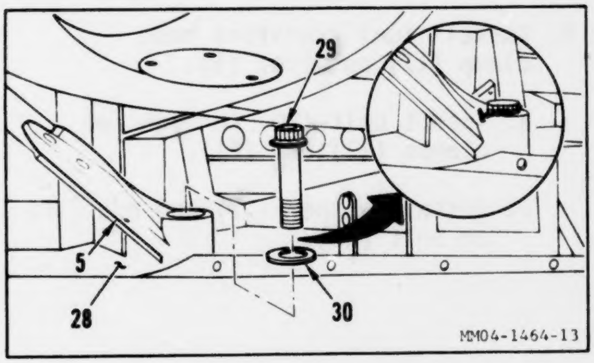
1. Check strut for damage and corrosion (para 2-3-2).
2. Check rotor support mast base for damage and corrosion (para 2-3-2).
3. Check nuts and bolts for stripped threads.

D. INSTALLATION

1. **Install struts (5) on rotor support mast base (31).**
   - a. Insert bolt (34) through washer (35), struts (5), and base (31).
   - b. Ensure nut (33) run-on torque exceeds **50 INCH-POUNDS.**
   - c. Install nut (33). Use 1/2 drive ratchet handle and 5-inch extension.



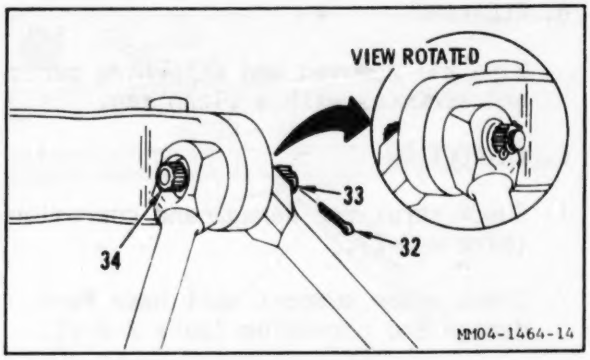
2. **Install strut (5) on transmission deck (28).** Install bolt (29) through washer (30), and strut (5) into deck (28).
3. **Torque bolt (29) to 290 FOOT-POUNDS.** Use aft support strut wrench.
4. **Lockwire bolt (29) to strut (5).** Use lockwire (E29).



GO TO NEXT PAGE

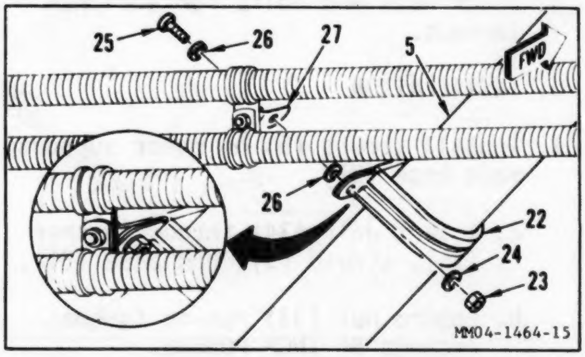
2-3-46. AFT LEFT CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-46

5. **Torque nut (33) to 280 to 300 FOOT-POUNDS.**
   a. One person holds bolt (34).
   b. Torque nut (33) to **280 FOOT-POUNDS.** Use 1/2 drive torque wrench and 5-inch extension.
   c. If cotter pin hole is not alined, increase torque to aline, but do not exceed **300 FOOT-POUNDS.**

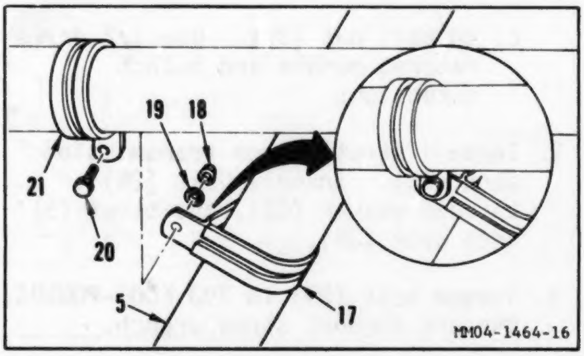


6. **Install cotter pin (32) in alined hole.**

7. **Install engine control cable clamp (22) on strut (5).**
   a. Insert screw (25) through washer (26), clip (27), washer (26), and clamp (22).
   b. Install washer (24) and nut (23) on screw (25).



8. **Install fuel crossfeed hose clamp (17) on strut (5).**
   a. Insert bolt (20) through two clamps (17) and (21).
   b. Install washer (19) and nut (18) on bolt (20).



GO TO NEXT PAGE

2-3-46. AFT LEFT CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-46

9. **Install harness clamp (11) on strut (5).**

   a. Insert screw (14) through clamps (11) and (15) and clip (16).

   b. Install washer (13) and nut (12).

10. **Install harness clamp (4) on strut (5).**

    a. Insert screw (8) through three clamps (4), (9), and (10).

    b. Install washer (7) and nut (6).

11. **Install left aft side transmission strut** (para 2-3-50).

12. **Release tension on lifting sling (2).** One person release tension on sling (2).

13. **Remove lifting hook (1) from lifting sling (2).**

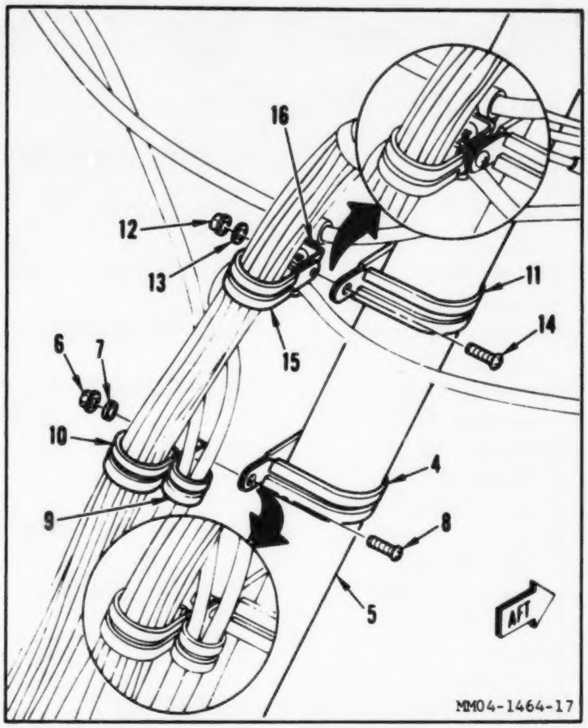
14. **Inspect (TI).**

15. **Remove air vehicle sling** (para 1-7-24).

16. **Remove maintenance crane** (para 1-7-50).

17. **Install air data sensor system** (para 6-3-35).

18. **Secure access doors T250L, T250R, T290L, and L325** (para 2-2-2).



END OF TASK

2-3-47. AFT RIGHT CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION 2-3-47

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Sling, Air Vehicle	7-262110009
Handle, Ratchet, 1/2 Drive	5120-00-230-6385
Wrench, 15/16 & 1-inch Box	5120-00-204-2670
Breaker Bar, Telescopic, 3/4 Drive	5120-00-490-3762
Wrench, Torque, 3/4 Drive	5120-00-902-3550
Wrench, Torque, 3/8 Drive	5120-00-228-8865
Adapter, 3/4, 1/2 Drive	5120-00-144-5207
Wrench, Aft Support Strut	7-263110002
Extension, 5-Inch	5120-00-243-7326

Materials/Parts:

	Cotter Pin
(E12)	Sealant, Adhesive
(E29)	Lockwire
(E44)	Rubber Sheet

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

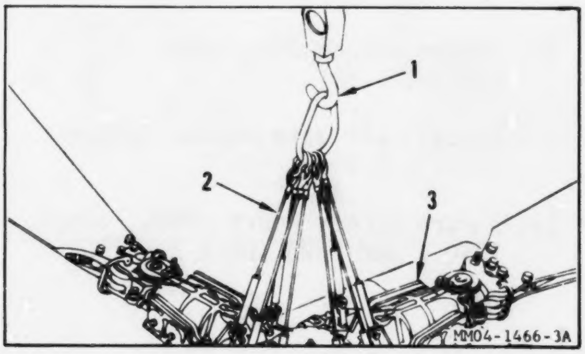
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panels T250L, T250R, T290L, and T290R opened
2-3-51	Right aft side transmission strut removed
6-3-35	Air data system mast removed
1-7-24	Air vehicle sling installed
1-7-42	Maintenance crane installed

A. REMOVAL

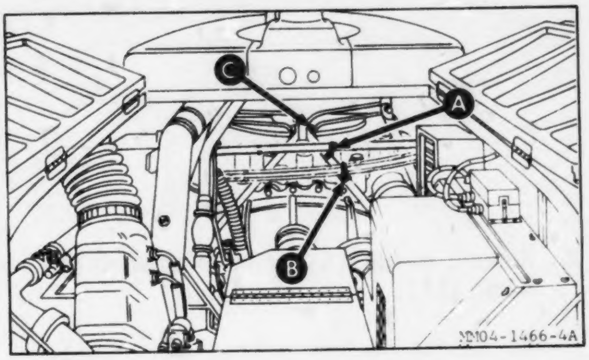
1. Connect lifting hook (1) to air vehicle sling (2).

2. One person apply tension to lifting hook (1) to relieve weight of rotor head (3) from transmission struts.

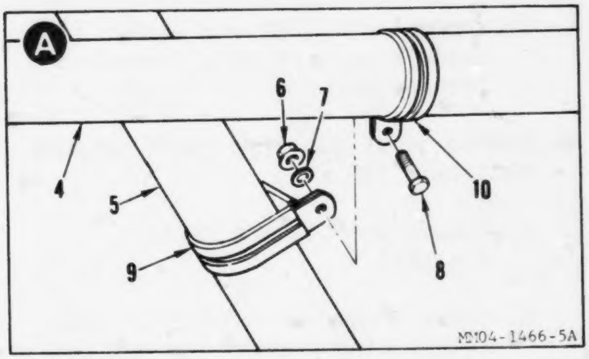


GO TO NEXT PAGE

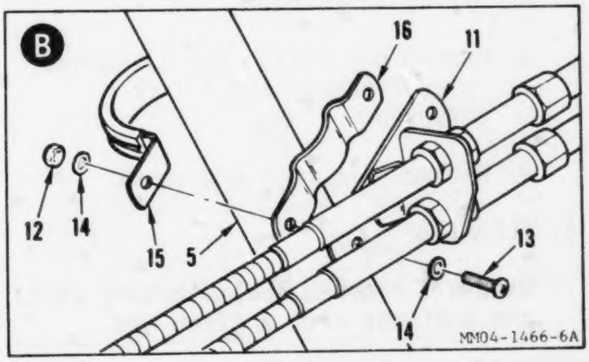
2-3-47. AFT RIGHT CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-47



3. **Remove fuel crossfeed hose (4), clamps (10) and (9) from strut (5).**
   a. Remove nut (6) and washer (7).
   b. Remove screw (8) from strut clamp (9) and fuel hose clamp (10).

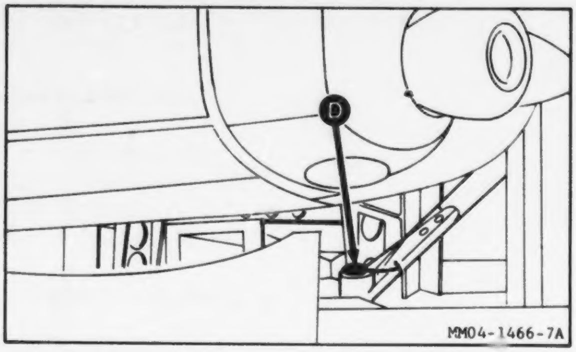


4. **Remove engine control cable bracket (11) from strut (5).**
   a. Remove two nuts (12).
   b. Remove two screws (13) and four washers (14) from strap (15), saddle (16), and engine control cable bracket (11).



GO TO NEXT PAGE

2-3-47. AFT RIGHT CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-47



5. **Remove strut (5) from transmission deck (17).**

   a. Remove lockwire from bolt (18).

   b. Remove bolt (18) and washer (19). Use aft support strut wrench and breaker bar.

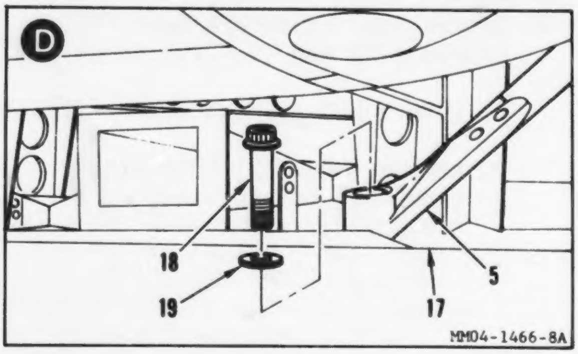
6. **Remove strut (5) from rotor support mast base (20).**

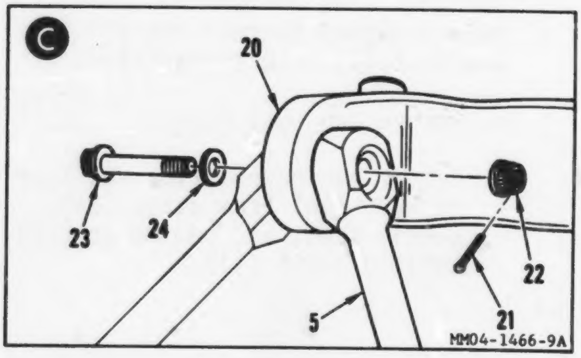
   a. Remove and discard cotter pin (21).

   b. Break torque on nut (22). Use telescoping breaker bar and 3/4 1/2-drive adapter.

   c. Remove nut (22). Use 1/2-drive ratchet handle and 5-inch extension.

   d. Remove bolt (23) and washer (24).





B. **CLEANING**

Wipe all removed and attaching parts and surfaces with a clean rag.

C. **INSPECTION**

1. **Check strut for damage and corrosion** (para 2-3-2).

2. **Check rotor support mast base for damage and corrosion** (para 2-3-2).

3. **Check nuts and bolts for stripped threads.**

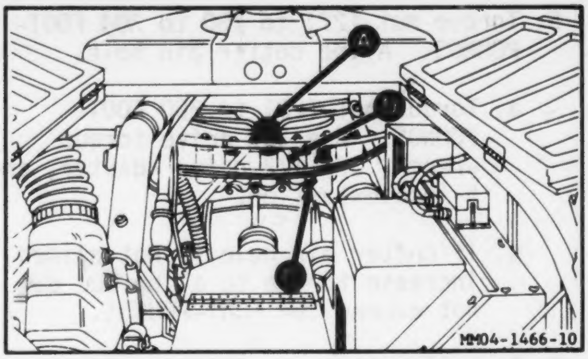
GO TO NEXT PAGE

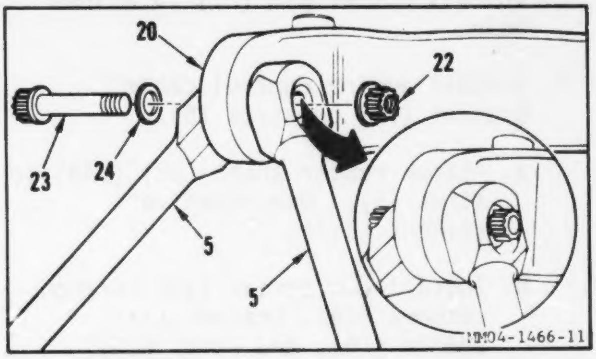
D. INSTALLATION

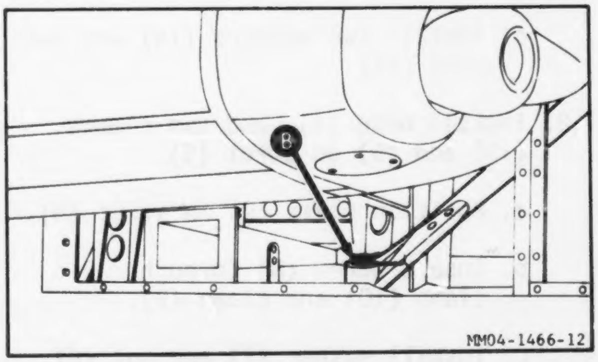
NOTE

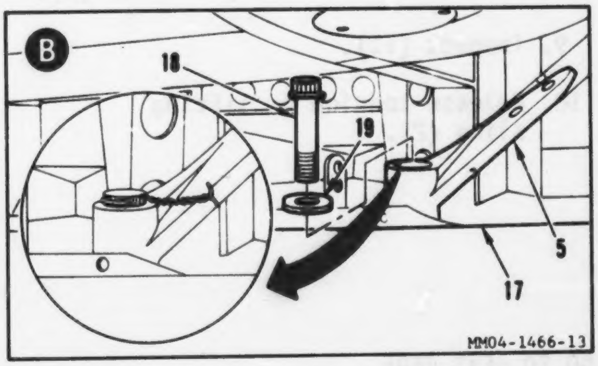
Nut may be reused if run-on torque exceeds **50 INCH-POUNDS**.

1. **Install strut (5) on rotor support mast base (20).**
   - a. Insert bolt (23) through washer (24), struts (5), and base (20).
   - b. Put nut (22) on bolt (23) fingertight.
   - c. Make sure nut (22) has not less than **50 INCH-POUNDS** run-on torque. Use 3/8-drive torque wrench.
2. **Install strut (5) on transmission deck (17).** Install bolt (18) through washer (19), and strut (5) into deck (17).
3. **Torque bolt (18) to 290 FOOT-POUNDS.** Use 3/4 drive torque wrench and aft support strut wrench.
4. **Lockwire bolt (18) to strut (5).** Use lockwire (E29).









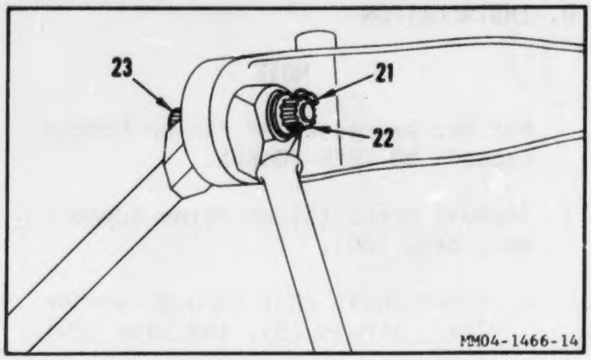
GO TO NEXT PAGE

2-3-47. AFT RIGHT CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-47

5. **Torque nut (22) to 280 to 304 FOOT-POUNDS.** Aline cotter pin hole.

   a. Torque nut (22) to **280 FOOT-POUNDS.** Use 3/4 drive torque wrench, 3/4 1/2-drive adapter, and 5-inch extension.

   b. If cotter pin hole is not alined, increase torque to aline but do not exceed **304 FOOT-POUNDS.**



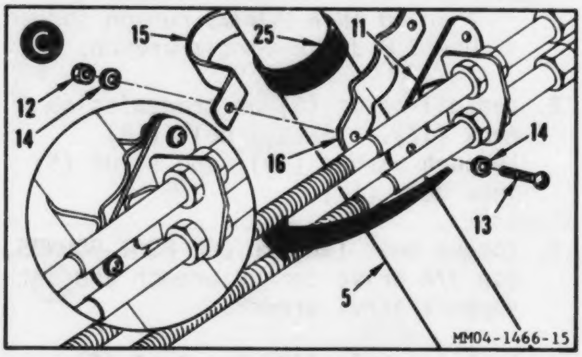
6. **Install cotter pin (21) in alined hole.**

7. **Install engine control cable bracket (11) on strut (5).**

   a. Attach rubber sheet (25) (E44) to strut (5). Use adhesive sealant (E12).

   b. Install two screws (13) through washers (14), bracket (11), saddle (16), and strap (15).

   c. Install two washers (14) and two nuts (12).

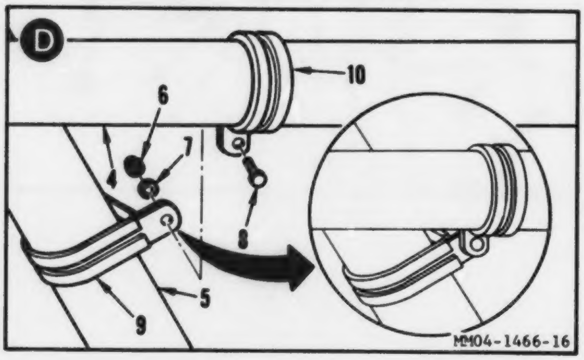


8. **Install hose (4), and two clamps (10) and (9) on strut (5).**

   a. Position clamp (9) on strut (5).

   b. Insert screw (8) through clamp (10) and clamp (9).

   c. Install washer (7) and nut (6).



9. **Inspect (TI).**

10. **Release tension on lifting sling (2).**

GO TO NEXT PAGE

2-3-47. AFT RIGHT CENTER TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-47

11. Install right aft side transmission strut (para 2-3-51).

12. Remove lifting sling (2) from lifting hook (1).

13. Remove air vehicle sling (para 1-7-24).

14. Remove maintenance crane (para 1-7-50).

15. Install air data system mast (para 6-3-35).

16. Secure access doors T290L, T290R, T250L, and T250R (para 2-2-2).

END OF TASK

2-3-48. LEFT FORWARD SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION 2-3-48

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Handle, Ratchet, 1/2 Drive	5120-00-230-6385
Extension, 5-inch, 1/2 Drive	5130-00-243-7326
Wrench, 15/16 & 1-inch Box	5120-00-204-2670
Breaker Bar, Telescopic, 3/4 Drive	5120-00-490-3762
Adapter, 3/4, 1/2 Drive	5120-00-144-5207
Adapter, 1/2, 3/8 Drive	5120-00-867-5517
Wrench, Torque, 3/4 Drive	5120-00-902-3550
Wrench, Torque, 3/8 Drive (150 to 750 in.-lb)	5120-00-821-3441
Wrench, Torque, 3/8 Drive (0-600 in.-lb)	5120-00-288-8865

Materials/Parts:

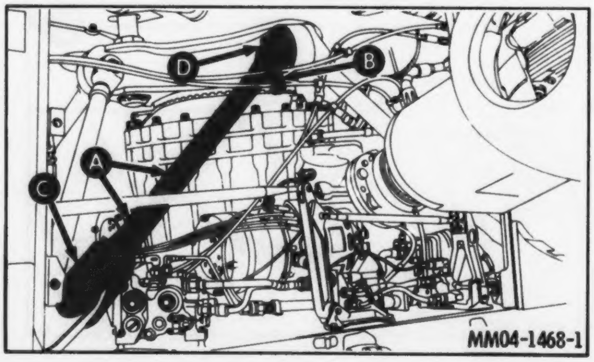
Cotter Pin

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panels L200 removed
7-2-3	Primary hydraulic system vented



MM04-1468-1

GO TO NEXT PAGE

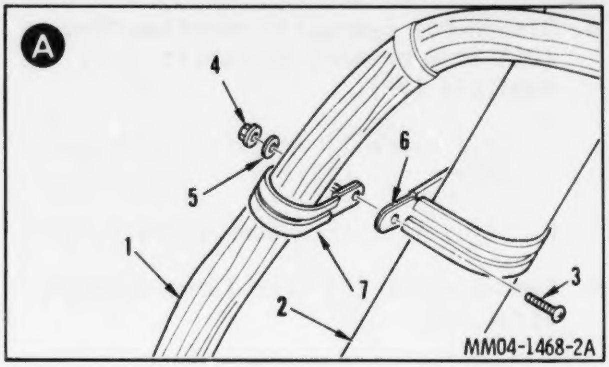
2-3-48. LEFT FORWARD SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-48

A. REMOVAL

1. **Remove wire harness (1) from left forward side transmission strut (2).**

   a. Remove nut (4) and washer (5).

   b. Remove screw (3) from strut clamp (6) and wire harness clamp (7).

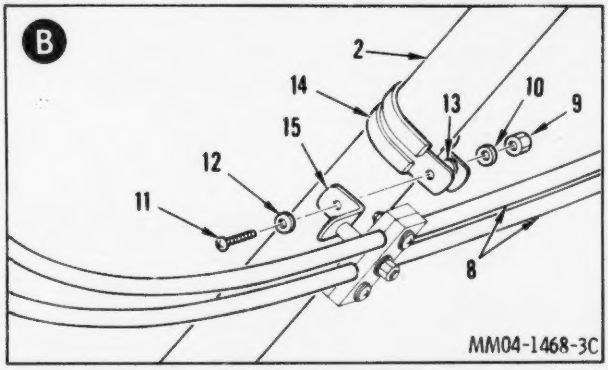


2. **Remove engine control cables (8) from strut (2).**

   a. Hold Screw (11).

   b. Remove nut (9) and washer (10).

   c. Remove screw (11) and washers (12) and (13) from strut clamp (14) and engine control cable mounting clip (15).



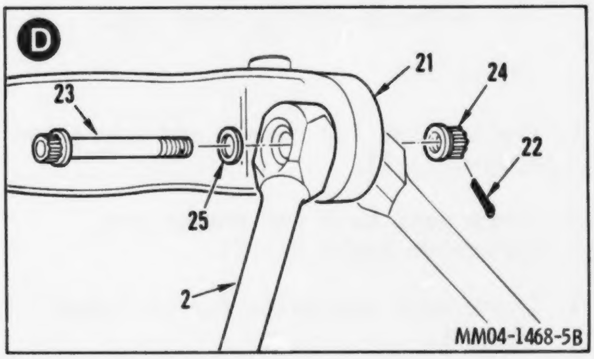
3. **Remove strut (2) from rotor support mast base (16).**

   a. Remove and discard cotter pin (17).

   b. Hold bolt (18). Use 15/16 socket.

   c. Remove nut (19). Use breaker bar and 3/4 1/2-drive adapter.

   d. Remove bolt (18) and washer (20) from mast base (16) and strut (2).



GO TO NEXT PAGE

2-3-48. LEFT FORWARD SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-48

4. **Disconnect hydraulic overflow line (21) from primary hydraulic manifold (22).**

   a. Hold hydraulic manifold (22) nut. Remove nut (23).

   b. Slide line (21) down through hole.

5. **Remove strut (2) from forward center strut (24).**

   a. Hold two bolts (25).

   b. Remove two nuts (26) and two washers (27). Use 1/2-drive ratchet handle and 5-inch extension. Discard two nuts (27).

   c. Remove two bolts (25) from struts (2) and (24).

B. CLEANING

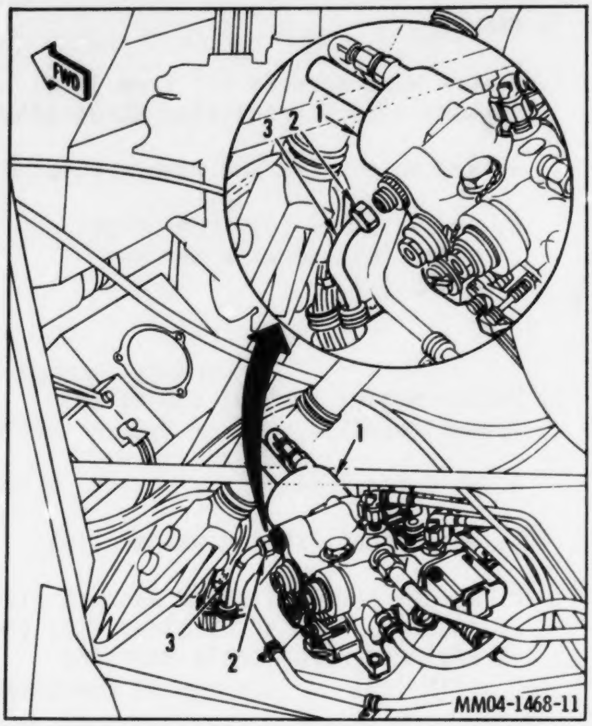
Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

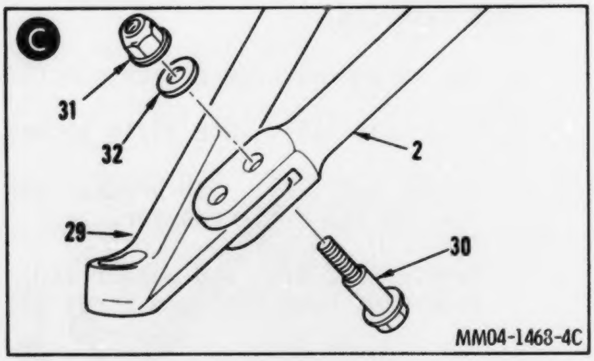
1. **Check strut for damage and corrosion** (para 2-3-2).

2. **Check mast base for damage and corrosion** (para 2-3-2).

3. **Check nuts and bolts for stripped threads.**



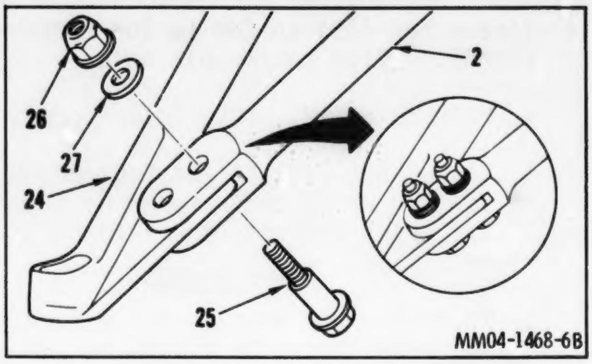
MM04-1468-11



MM04-1468-4C

GO TO NEXT PAGE

D. INSTALLATION



1. **Install strut (2) on forward center strut (24).**

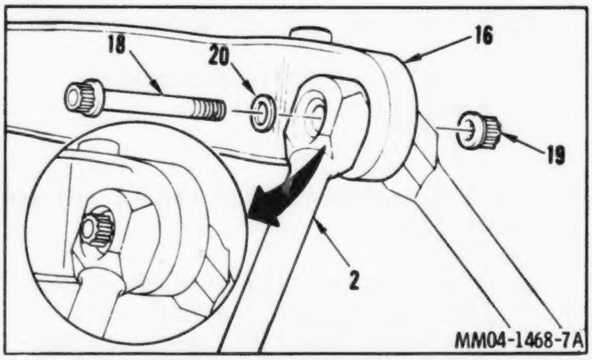
   a. Install two bolts (25) in strut (2) and center strut (24).

   b. Hold two bolts (25).

   c. Install two washers (27) and two new nuts (26). Use 1/2 drive ratchet handle and 5-inch extension.

NOTE

Nut may be reused if run-on torque exceeds **50 INCH-POUNDS.**



2. **Install strut (2) on rotor support mast base (16).**

   a. Insert bolt (18) with washer (20) in strut (2) and mast base (16).

   b. Hold bolt (18). Use 15/16 box wrench.

   c. Put nut (19) on bolt (18) fingertight.

   d. Make sure nut (19) has not less than **50 INCH-POUNDS** run-on torque. Use 3/8-drive torque wrench (0 to 600 in.-lb).

3. **Torque two nuts (26) to 600 INCH-POUNDS.**

   a. Hold two bolts (25).

   b. Torque two nuts (26) to **600 INCH-POUNDS.** Use 3/8-drive torque wrench (150 to 750 in.-lb); 1/2 3/8 drive adapter; and 5-inch extension.

GO TO NEXT PAGE

2-3-48. LEFT FORWARD SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-48

4. **Torque nut (19) to 280 to 304 FOOT-POUNDS.** Aline cotter pin hole.

   a. Hold bolt (18). Use 15/16 socket.

   b. Torque nut (19) to **280 FOOT-POUNDS.** Use 3/4 drive torque wrench; 3/4 1/2 drive adapter; and 5-inch extension.

   c. If cotter pin hole is not alined, increase torque to aline, but do not exceed **304 FOOT-POUNDS.**

5. **Install cotter pin (17) in alined hole.**

6. **Connect hydraulic overflow line (21) to primary hydraulic manifold (22).**

   a. Slide line (21) up through hole.

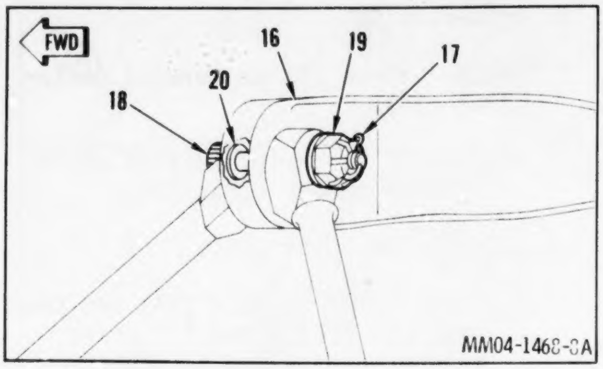
   b. Install nut (23) on hydraulic manifold (22). Tighten nut (23).

7. **Install engine control cables (8) on strut (2).**

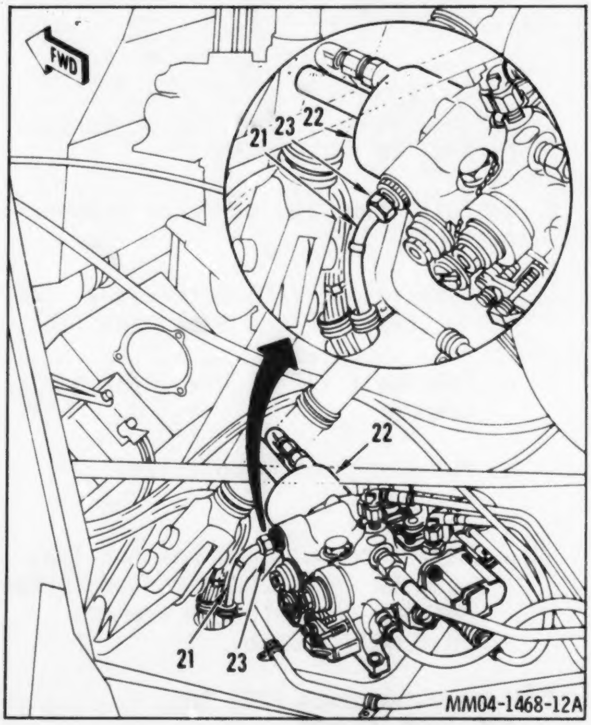
   a. Insert screw (11) through washer (12) and engine control cable mounting clip (15), strut clamp (14) and washer (13).

   b. Hold screw (11).

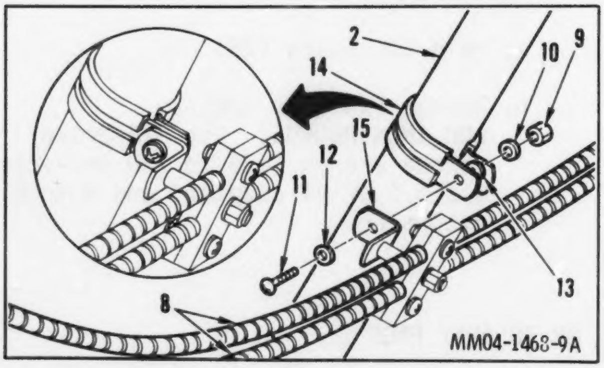
   c. Install washer (10) and nut (9).



MM04-1468-8A



MM04-1468-12A



MM04-1468-9A

GO TO NEXT PAGE

2-3-48. LEFT FORWARD SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-48

8. **Install wire harness (1) on strut (2).**

   a. Insert screw (3) through strut clamp (6) and wire harness clamp (7).

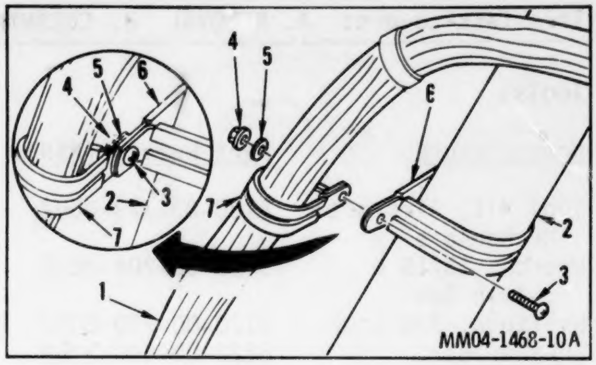
   b. Hold screw (3).

   c. Install washer (5) and nut (4) on screw (3).

9. **Inspect (TI).**

10. **Service hydraulic system** (para 1-5-23).

11. **Secure access panel L200** (para 2-2-2).



END OF TASK

2-3-49. RIGHT FORWARD SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION 2-3-49

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, 15/16 & 1-inch Box	5120-00-204-2670
Driftpin, 3/4-inch	5120-00-239-0037
Breaker Bar, Telescopic, 3/4 Drive	5120-00-490-3762
Adapter, 3/4, 1/2 Drive	5120-00-144-5207
Wrench, Torque, 3/4 Drive	5120-00-902-3550
Wrench, Torque, 3/8 Drive (0 to 600 in.-lb)	5120-00-228-8865
Wrench, Torque, 3/8 Drive (150 to 750 in.-lb)	5120-00-821-3441
Drift, 1/2-inch	5120-00-239-0036
Extension, 5-inch	5130-00-230-6385

Materials/Parts:

Cotter Pin

Personnel Required:

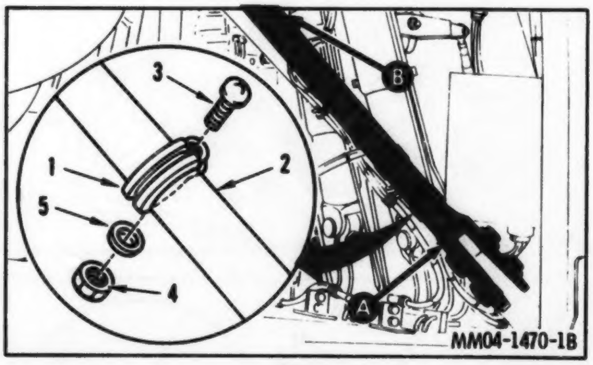
67R10	Attack Helicopter Repairer One to assist
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panels R200 removed

A. REMOVAL

1. **Remove two clamps (1) from right forward side transmission strut (2).**
   a. Remove two nuts (4) and two washers (5).
   b. Remove two screws (3).
   c. Remove two clamps (1) from strut (2).



GO TO NEXT PAGE

2-3-49. RIGHT FORWARD SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-49

2. Remove upper end of strut (2) from rotor support mast base (6).

a. Remove cotter pin (7).

b. Hold bolt (8). Use 15/16 box wrench.

c. Remove nut (9). Use breaker bar and 3/4 1/2 drive adapter.

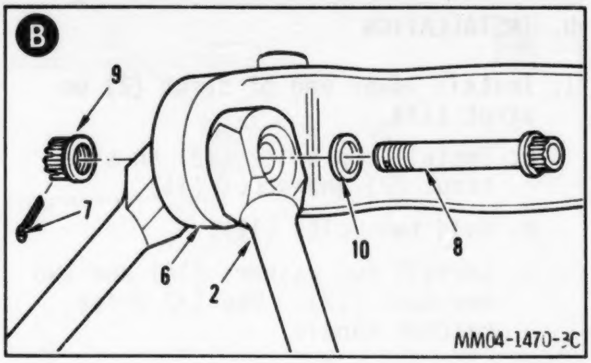
d. Remove bolt (8) and washer (10) from mast base (6) and strut (2).

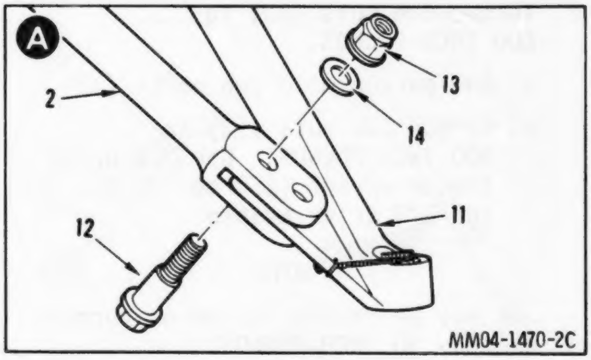
3. Remove lower end of strut (2) from forward center transmission strut (11).

a. Hold two bolts (12).

b. Remove two nuts (13) and two washers (14). Use 1/2 drive ratchet handle. Discard two nuts (13).

c. Remove two bolts (12) from struts (2) and (11). Use 1/2-inch driftpin.





B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. Check strut for damage (para 2-3-2).

2. Check mast base for damage (para 2-3-2).

3. Check strut and mast base for corrosion (para 2-3-2).

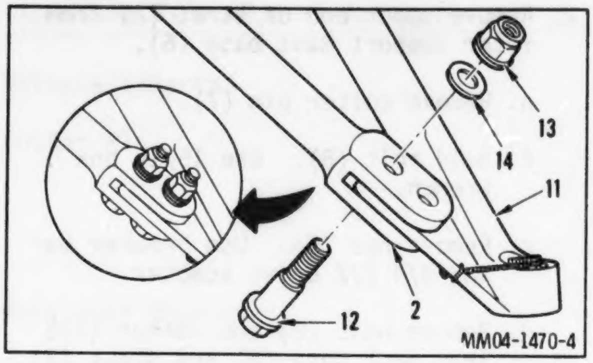
4. Check nuts and bolts for stripped threads.

GO TO NEXT PAGE

2-3-49. RIGHT FORWARD SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-49

D. INSTALLATION

1. **Install lower end of strut (2) on strut (11).**
   a. Install two bolts (12) in side strut (2) and strut (11).
   b. Hold two bolts (12).
   c. Install two washers (14) and two new nuts (13). Use 1/2 drive ratchet handle.

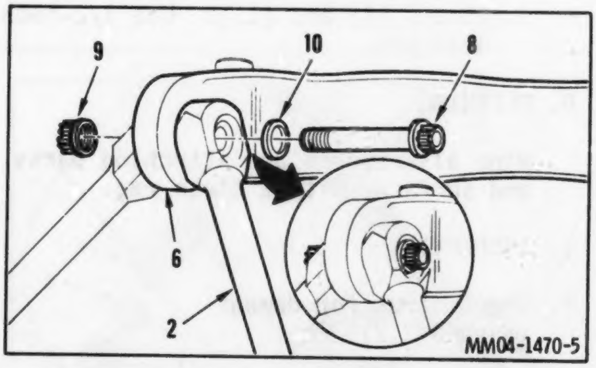


2. **Torque two nuts (13) to 600 INCH-POUNDS.**
   a. One person hold two bolts (12).
   b. Torque two nuts (13) to **600 INCH-POUNDS.** Use 3/8 drive torque wrench (150 to 750 in.-lb) and 3/8 drive adapter.

NOTE

Nut may be reused if run-on torque exceeds **50 INCH-POUNDS.**

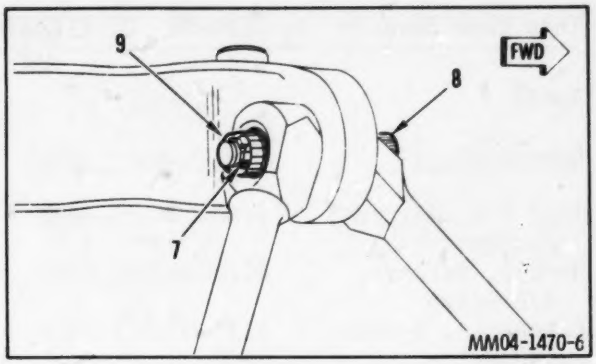
3. **Install upper end of strut (2) on rotor support mast base (6).**
   a. Aline strut (2) to mast base (6) with 3/4-inch driftpin.
   b. Insert bolt (8) through washer (10), side strut (2), and mast base (6).
   c. Hold bolt (8). Use 15/16 box wrench.
   d. Ensure nut (9) run on torque exceeds **50 INCH-POUNDS.**
   e. Install nut (9) on bolt (8) fingertight.
   f. Put nut (9) on bolt (8) fingertight.
   g. Make sure nut (9) has not less than **50 INCH-POUNDS** run-on torque. Use 3/8-inch torque wrench (0 to 600 in.-lb).

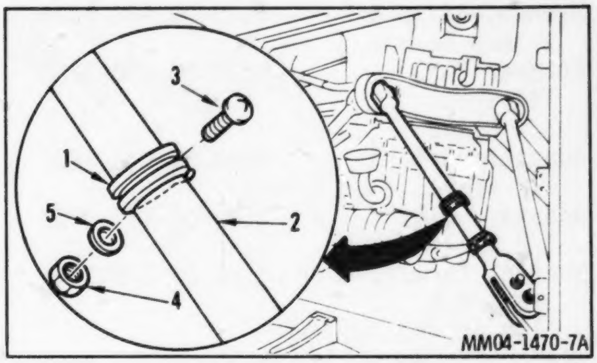


GO TO NEXT PAGE

2-3-49. RIGHT FORWARD SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-49

4. **Torque nut (9) to 280 to 304 FOOT-POUNDS and aline cotter pin hole.**
   a. One person holds bolt (8).
   b. Torque nut (9) to **280 FOOT-POUNDS.** Use 3/4 drive torque wrench, 3/4 to 1/2 drive adapter, and 5-inch extension.
   c. If cotter pin hole is not alined, increase torque to aline, but do not exceed **304 FOOT-POUNDS.**
5. **Install new cotter pin (7) in alined hole.**
6. **Install two clamps (1) on right forward strut (2).**
   a. Install clamps (1) over three wires from right generator and strut (2).
   b. Insert screws (3) through clamps. Hold screws (3).
   c. Install two washers (5) and two nuts (4).
7. **Inspect (TI).**
8. **Secure access panel R200** (para 2-2-2).





END OF TASK

2-3-50. LEFT AFT SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION 2-3-50

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Handle, Ratchet, 1/2 Drive	5120-00-230-6385
Extension, 5-inch, 1/2 Drive	5120-00-243-7326
Wrench, 15/16 & 1-inch Box	5120-00-204-2670
Breaker Bar, Telescopic, 3/4 Drive	5120-00-490-3762
Adapter, 3/4, 1/2 Drive	5120-00-144-5207
Adapter, 3/8, 1/2 Drive	5120-00-240-8702
Wrench, Torque, 3/8 Drive (150 to 750 in.-lb)	5120-00-821-3441
Wrench, Torque, 3/4 Drive	5120-00-902-3550
Wrench, Torque, 3/8 Drive (0 to 600 in.-lb)	5120-00-288-8865

Materials/Parts:

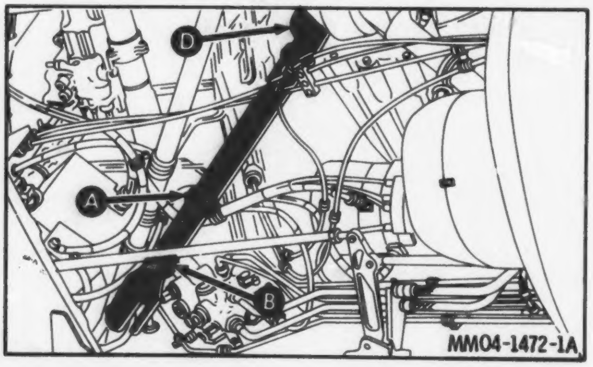
Cotter Pin

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panels L200 and L230 removed

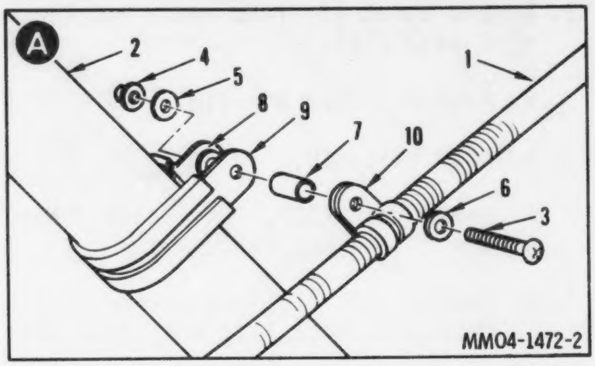


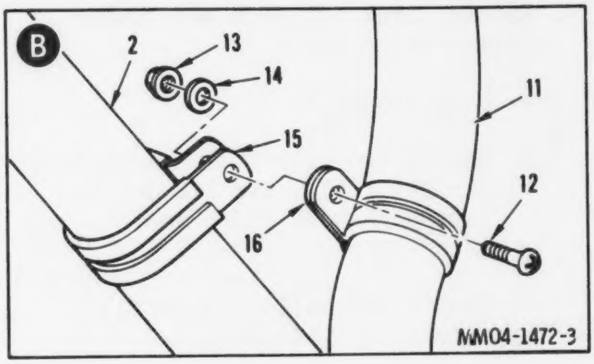
GO TO NEXT PAGE

2-3-50. LEFT AFT SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-50

A. REMOVAL

1. **Remove engine control cable (1) from left aft side transmission strut (2).**
   - a. Hold screw (3).
   - b. Remove nut (4) and washer (5).
   - c. Remove screw (3), washer (6), spacer (7), and washer (8) from strut clamp (9) and control cable clamp (10).
   - d. Remove clamp (9) from strut (2).
2. **Remove engine fuel hose (11) from strut (2).**
   - a. Hold screw (12).
   - b. Remove nut (13) and washer (14).
   - c. Remove screw (12) from strut clamp (15) and fuel hose clamp (16).
   - d. Remove clamp (15) from strut (2).





GO TO NEXT PAGE

2-3-50. LEFT AFT SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-50

3. **Remove strut (2) from rotor support mast base (17).**

   a. Remove cotter pin (18).

   b. Hold bolt (19).

   c. Remove nut (20). Use breaker bar and 5-inch adapter.

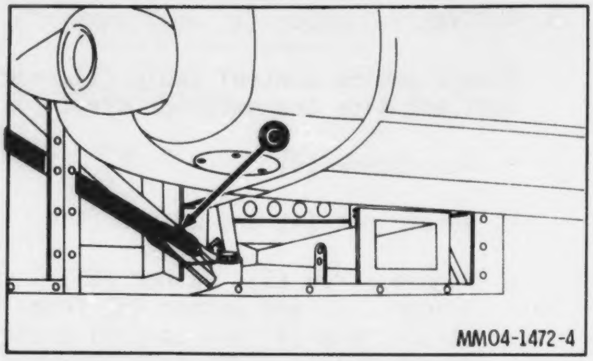
   d. Remove bolt (19) and washer (21) from mast base (17) and strut (2).

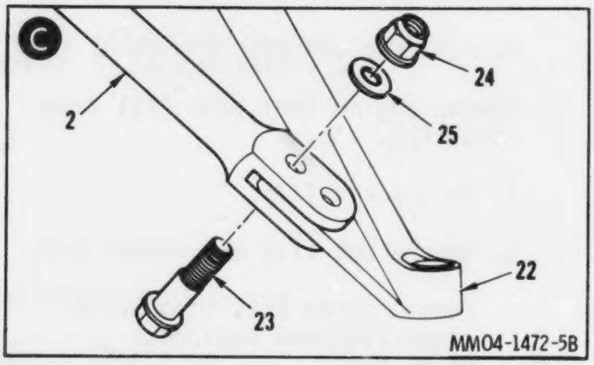
4. **Remove strut (2) from aft center transmission strut (22).**

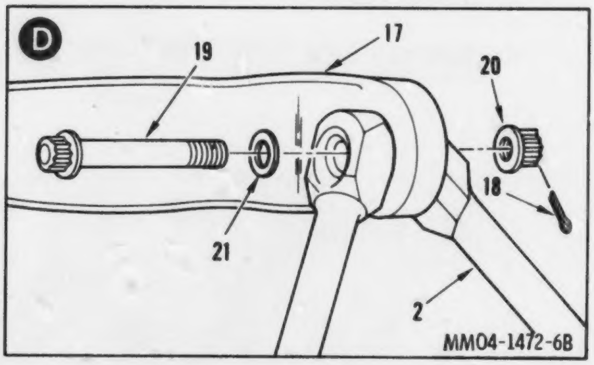
   a. Hold two bolts (23).

   b. Remove two nuts (24) and two washers (25). Use 1/2 drive ratchet handle and 5-inch extension.

   c. Remove two bolts (23) from struts (2) and (22).







B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. **Check strut for damage** (para 2-3-2).
2. **Check rotor support mast base for damage** (para 2-3-2).
3. **Check strut and mast base for corrosion** (para 2-3-2).
4. **Check nuts and bolts for stripped threads.**

GO TO NEXT PAGE

D. INSTALLATION

1. **Install strut (2) on strut (22).**

   a. Install two bolts (23) in strut (2) and strut (22).

   b. Hold two bolts (23).

   c. Install two washers (25) and two nuts (24). Use 1/2 drive ratchet handle and 5-inch extension.

2. **Torque two nuts (24) to 600 INCH-POUNDS.** Use 3/8 drive torque wrench (150 to 750 in.-lb); 3/8 1/2-drive adapter; and 5-inch extension.

NOTE

Nut may be reused if run-on torque exceeds **50 INCH-POUNDS.**

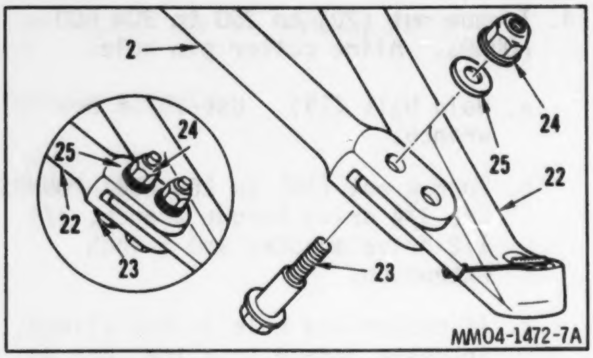
3. **Install strut (2) on base (17).**

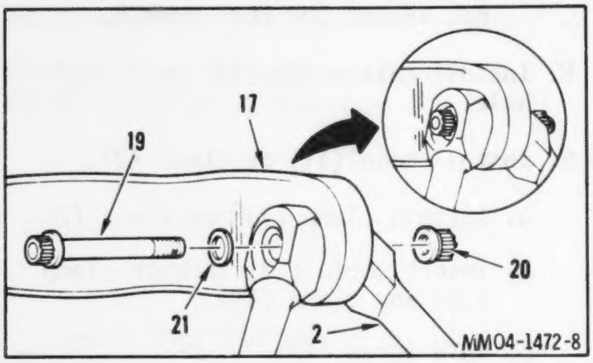
   a. Insert bolt (19) through washer (21), strut (2), and mast base (17).

   b. Hold bolt (19). Use 15/16 box wrench.

   c. Put nut (20) on bolt (19) fingertight.

   d. Make sure nut (20) has not less than **50 INCH-POUNDS** run-on torque. Use 3/8-drive torque wrench (0 to 600 in.-lb).

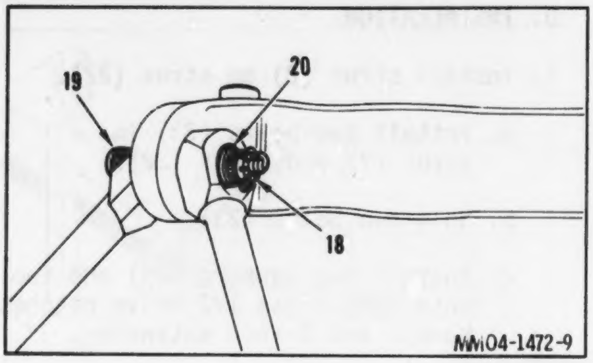




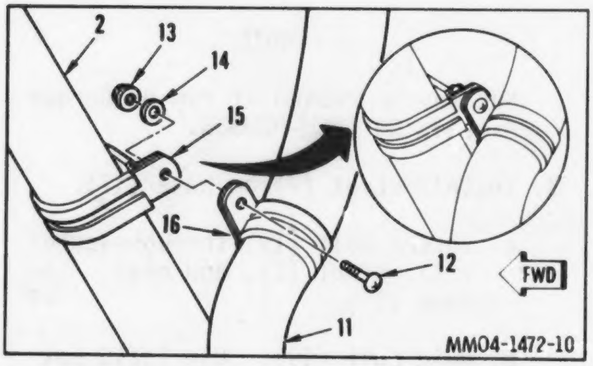
GO TO NEXT PAGE

2-3-50. LEFT AFT SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-50

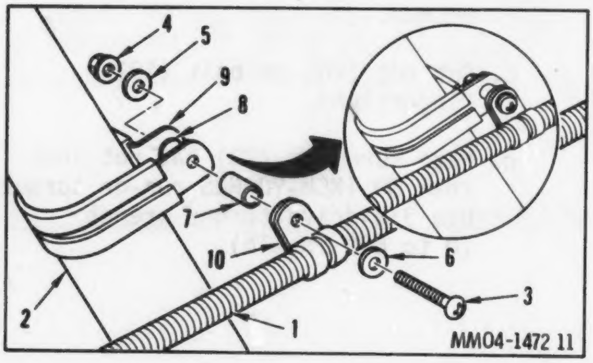
4. **Torque nut (20) to 280 to 304 FOOT-POUNDS. Aline cotter pin hole.**
   a. Hold bolt (19). Use 15/16 box wrench.
   b. Torque nut (20) to **280 FOOT-POUNDS.** Use 3/4 drive torque wrench, 3/4 1/2-drive adapter and 5-inch extension.
   c. If cotter pin hole is not alined, increase torque to aline, but do not exceed **304 FOOT-POUNDS.**
5. **Install cotter pin (18) in alined hole.**
6. **Install hose (11) on strut (2).**
   a. Install clamp (15) on strut (2).
   b. Insert screw (12) through clamp (16) and clamp (15).
   c. Hold screw (12).
   d. Install washer (14) and nut (13).
7. **Install engine control cable (1) on strut (2).**
   a. Install clamp (9) on strut (2).
   b. Insert screw (3) through washer (6), clamp (10), spacer (7), washer (8), and clamp (9).
   c. Hold screw (3).
   d. Install washer (5) and nut (4).
8. **Inspect (TI).**
9. **Secure access panels L200 and L230** (para 2-2-2).



MM04-1472-9



MM04-1472-10



MM04-1472 11

END OF TASK

2-3-51. RIGHT AFT SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION 2-3-51

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Handle, Ratchet, 1/2 Drive	5120-00-230-6385
Extension, 5-inch, 1/2 Drive	5120-00-243-7326
Wrench, 15/16 & 1-inch Box	5120-00-204-2670
Breaker Bar, Telescopic, 3/4 Drive	5120-00-490-3762
Adapter, 3/4, 1/2 Drive	5120-00-144-5207
Adapter, 3/8, 1/2 Drive	5120-00-240-8702
Wrench, Torque, 3/8 Drive (150 to 750 in.-lb)	5120-00-821-3441
Wrench, Torque, 3/8 Drive (0 to 600 in.-lb)	5120-00-288-8865
Wrench, Torque, 3/4 Drive	5120-00-902-3550
Drift, 3/4-inch	5120-00-239-0037

Materials/Parts:

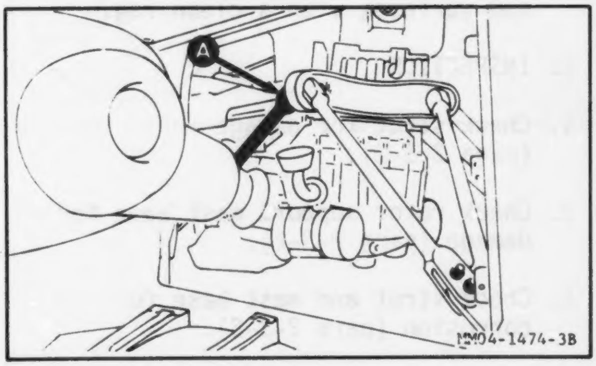
Cotter Pin

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panels R200 and R230 removed

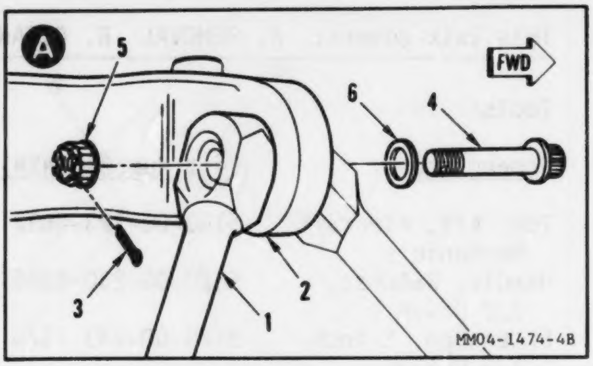


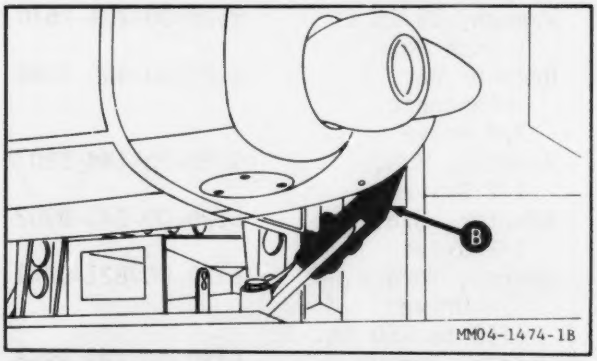
GO TO NEXT PAGE

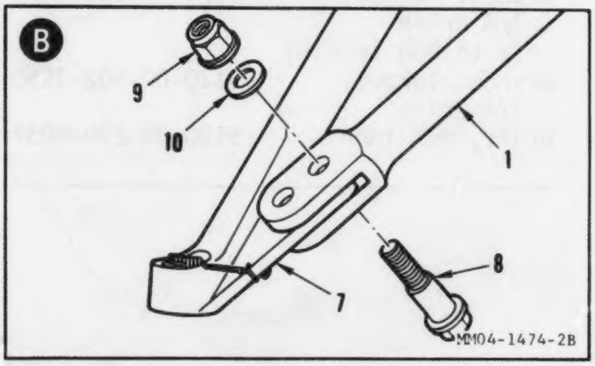
2-3-51. RIGHT AFT SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-51

A. REMOVAL

1. **Remove upper end of right aft side transmission strut (1) from rotor support mast base (2).**
   a. Remove and discard cotter pin (3).
   b. Hold bolt (4). Use 15/16 box wrench.
   c. Remove nut (5). Use telescoping breaker bar and 3/4, 1/2 drive adapter.
   d. Remove bolt (4) and washer (6) from mast base (2) to strut (1).
2. **Remove lower end of right aft side transmission strut (1) from aft center transmission strut (7).**
   a. Hold two bolts (8).
   b. Remove two nuts (9) and two washers (10).
   c. Remove two bolts (8) from struts (1) and (7).







B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

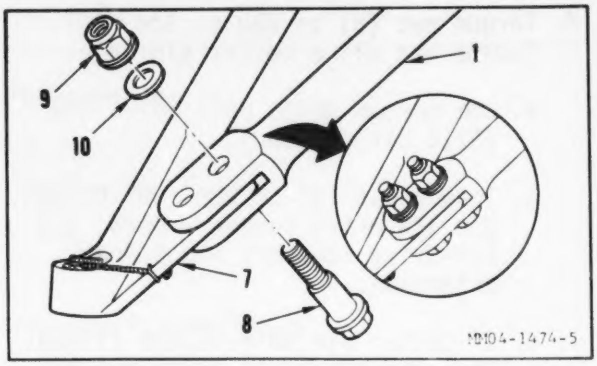
C. INSPECTION

1. **Check strut for damage** (para 2-3-2).
2. **Check rotor support mast base for damage** (para 2-3-2).
3. **Check strut and mast base for corrosion** (para 2-3-2).
4. **Check nuts and bolts for stripped threads.**

GO TO NEXT PAGE

2-3-51. RIGHT AFT SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-51

D. INSTALLATION

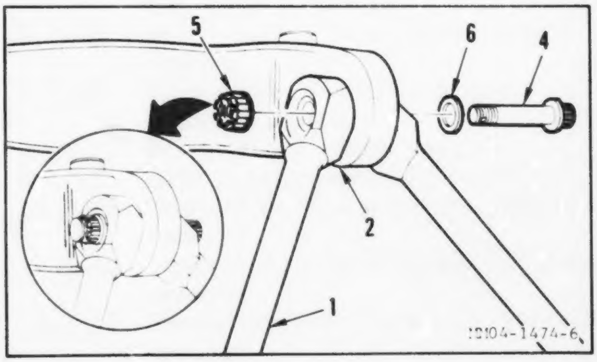


1. **Install lower end of strut (1) on aft center strut (7).**
   a. Install two bolts (8) in side strut (1) and center strut (7).
   b. Hold two bolts (8).
   c. Install two washers (10) and two nuts (9).

2. **Torque two nuts (9) to 600 INCH-POUNDS.**
   a. One person hold two bolts (8).
   b. Torque two nuts (9) to **600 INCH-POUNDS.** Use 3/8-drive torque wrench (150 to 750 in.-lb) and 3/8 1/2-drive adapter.

NOTE

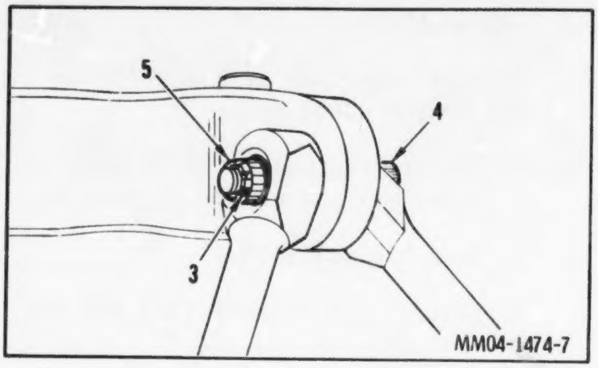
Nut may be reused if run-on torque exceeds **50 INCH-POUNDS.**



3. **Install upper end of aft side strut (1) on rotor support mast base (2).**
   a. Aline strut (1) to mast base (2) with 3/4-inch drift.
   b. Insert bolt (4) through washer (6), strut (1), and mast base (2).
   c. Hold bolt (4). Use 15/16 socket.
   d. Put nut (5) on bolt (4) fingertight.
   e. Make sure nut (5) has not less than **50 INCH-POUNDS** run-on torque. Use 3/8-drive torque wrench (0 to 600 in.-lb).

GO TO NEXT PAGE

2-3-51. RIGHT AFT SIDE TRANSMISSION STRUT REMOVAL/INSTALLATION (cont) 2-3-51



4. **Torque nut (5) to 280 to 304 FOOT-POUNDS and aline cotter pin hole.**
   a. One person holds bolt (4). Use 15/16 box wrench.
   b. Torque nut (5) to **280 FOOT-POUNDS.** Use 3/4 drive torque wrench; 3/4 1/2-drive adapter; and 5-inch extension.
   c. If cotter pin hole is not alined, increase torque to aline but do not exceed **304 FOOT-POUNDS.**
5. **Install new cotter pin (3) in alined hole.**
6. **Inspect (TI).**
7. **Secure access panel R200 and R230 (para 2-2-2).**

END OF TASK

2-3-52. MAST BASE REMOVAL/INSTALLATION 2-3-52

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR E. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, 15/16 and 1-inch Box	5120-00-204-2670
Breaker Bar, Telescopic 3/4 Drive	5120-00-490-3762
Adapter, 3/4, 1/2 Drive	5120-00-144-5207
Wrench, Torque, 3/4 Drive	5120-00-902-3550
Drift, 3/4-inch	5120-00-239-0037
Extension, 5-inch, 1/2 Drive	5120-00-243-7326
Wrench, Torque, 1/2 Drive	5120-00-270-3121
Sling Assembly, Universal	1730-01-166-3543
Wrench, Mast Support Strut	7-263110002
Wrench, Torque, 3/8 Drive (0 to 600 in.-lb)	5120-00-288-8865
Wrench, Torque, 3/8 Drive (150 to 750 in.-lb)	5120-00-821-3441

Materials/Parts:

	Cotter Pin (4)
(E28)	Compound, Sealing
(E31)	Cheesecloth
(E39)	Trichloroethane
(E74)	Cloth, Abrasive

Personnel Required:

67R10	Attack Helicopter Repairer (3) Two to assist
66R30	Inspector/Supervisor

References:

TM 55-1500-204-25/1
TM 55-1500-345-23

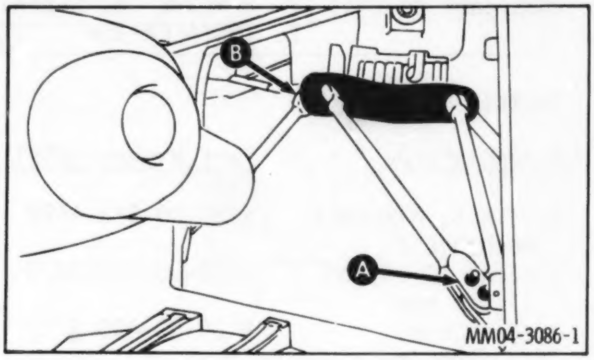
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access door R295 opened, panels L200, R200, L230 and R230 removed, doors T250L, T250R, T290L, T290R, and L325 removed
1-7-42	Maintenance crane installed
5-2-4	Main rotor blades removed
6-3-35	Air data system mast assembly removed
6-3-34	Main rotor bearing nut adapter and plug removed
6-3-38	Main rotor drive plate cover removed
6-3-39	Main rotor flexible support assembly removed
6-3-42	Drive plate cover removed
6-3-41	Main rotor gearshaft removed
11-3-45	Main rotor blade pitch links removed
11-3-40	Load bearing main rotor scissor removed
11-3-41	Secondary main rotor scissor removed
11-3-44	Longitudinal and collective bellcranks removed
5-2-11	Main rotor head removed
11-3-33	Swashplate removed
1-5-21	Transmission oil drained
7-2-3	Primary hydraulic system vented
7-4-2	Utility hydraulic system vented
6-3-46	Main transmission removed
6-3-43	Main rotor support mast removed

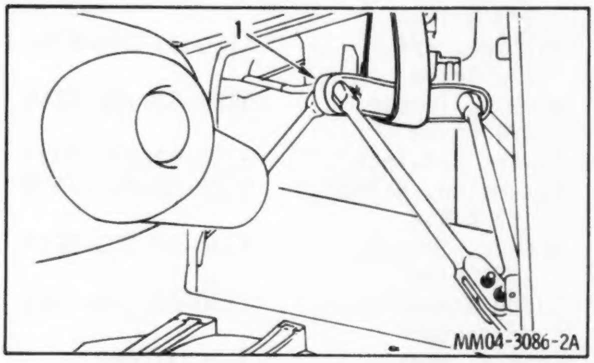
GO TO NEXT PAGE

2-3-52. MAST BASE REMOVAL/INSTALLATION (cont) 2-3-52

A. REMOVAL



1. **Attach universal sling to mast base (1).**



2. **Loosen but do not remove eight nuts (2) and bolts (3) on four left and right transmission struts (4).**

3. **Cut lockwire and loosen four bolts(5) from four forward and aft transmission struts (6). Do not remove.** Use mast support strut wrench and breaker bar.

4. **Support mast base (1).** Remove four bolts (7) from mast base (1).

    a. Remove cotter pin (8).

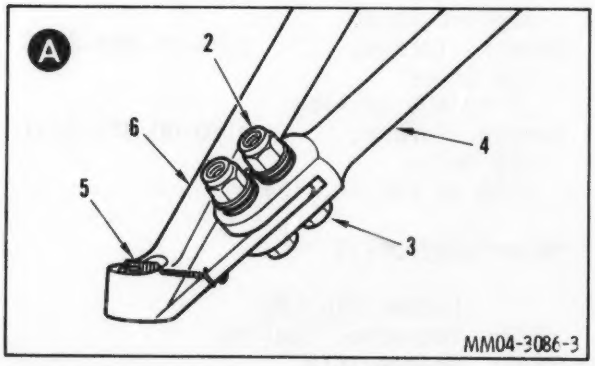
    b. Hold bolt (7). Use 15/16 box wrench.

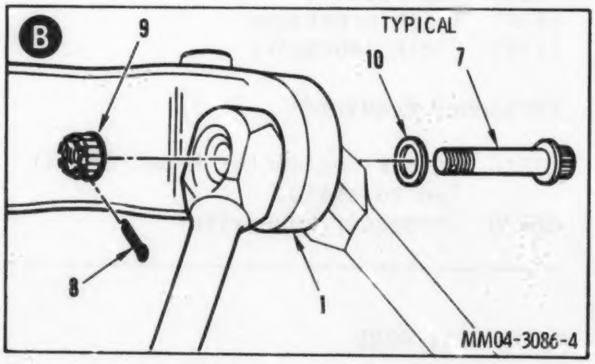
    c. Remove nut (9). Use breaker bar and 3/4 1/2-drive adapter.

    d. Remove bolt (7) and washer (10) from mast base (1).

    e. Repeat steps 4.a. through 4.d. for remaining three bolts (7).

5. **Gently lift and remove mast base (1).**





GO TO NEXT PAGE

B. CLEANING

Wipe all removed and attaching parts with a clean rag.

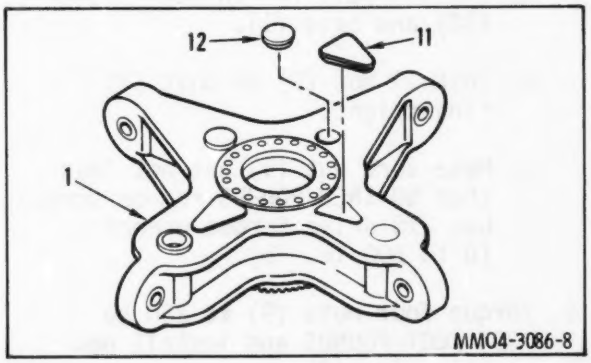
C. INSPECTION

1. **Check mast base and transmission struts for cracks.** None allowed.

2. **Check mast base and transmission struts for nicks, scratches, and gouges.** Acceptable without rework: nicks, scratches, and gouges that do not penetrate surface protective finish. Rework where nicks, scratches, and gouges penetrate finish: smooth-out sharp edges with minimal material loss. Check reworked area for cracks; use fluorescent dye. No cracks allowed. Reapply protective finish (TM 55-1500-204-25/1).

3. **Check mast base for corrosion** (para 1-5-38).

D. REPAIR



1. **Remove two covers (11) and two covers (12) from base (1).**

   a. Remove sealing compound from around two covers (11) and two covers (12). Use abrasive cloth (E74).

   b. Wipe two covers (11) and two covers (12). Use trichloroethane (E39) and cheesecloth (E31) (para 1-5-36).

2. **Install two covers (11) and two covers (12) on base (1).**

   a. Install two covers (11) and two covers (12) in base (1).

   b. Put 1/16-inch bead of sealing compound (E28) around edges of two covers (11) and two covers (12).

   c. Coat exterior surfaces of two covers (11) and two covers (12). Use polyurethane coating (E64) (TM 55-1500-345-23).

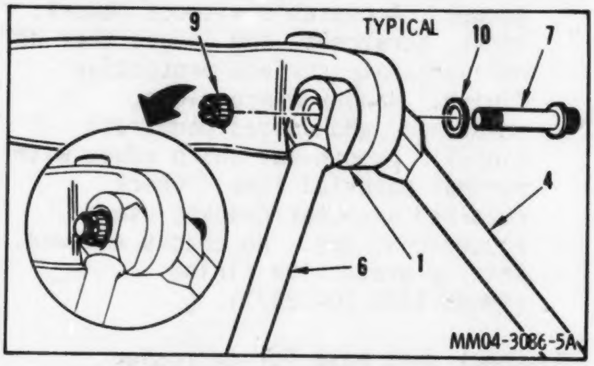
GO TO NEXT PAGE

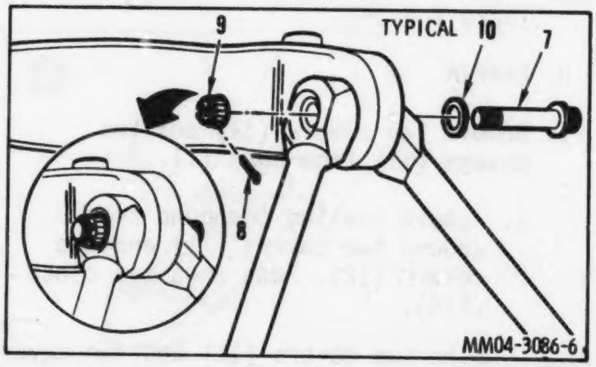
E. INSTALLATION

NOTE

- Position mast base on struts so one mixer pivot support faces forward, and other support faces right side of helicopter.
- Nuts may be reused if run on torque exceeds **50 INCH-POUNDS.**

1. **Install mast base (1) on four transmission struts (4) and (6).**
   a. Lower mast base (1) on four struts (4) and (6). Use universal sling.
   b. Aline struts (4) and (6) to base (1). Use 3/4-inch driftpin.
   c. Install bolt (7) through washer (10) and base (1).
   d. Install nut (9) on bolt (7) fingertight.
   e. Make sure nut (9) has not less than **50 INCH-POUNDS** run-on torque. Use 3/8-drive torque wrench (0 to 600 in.-lb).

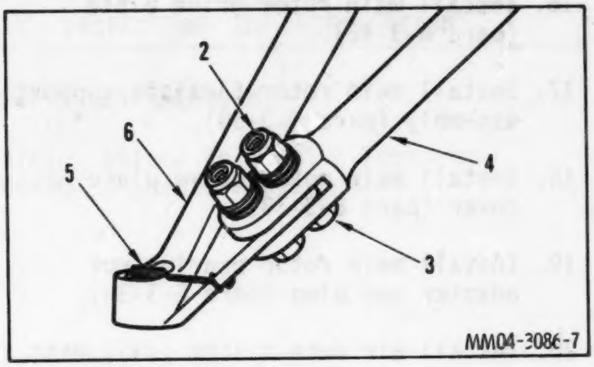




2. **Torque four nuts (9) to 280 to 304 FOOT-POUNDS and install new cotter pins (8).**
   a. Hold bolt (7).
   b. Torque nut (9) to **280 FOOT-POUNDS.**
   c. If cotter pin hole is not alined, increase torque to aline. Do not exceed **304 FOOT-POUNDS.** Use 1/2-inch drive torque wrench and 5-inch extension.
   d. Install cotter pin (8) in alined hole.

GO TO NEXT PAGE

2-3-52. MAST BASE REMOVAL/INSTALLATION (cont) 2-3-52



3. **Torque four bolts (5) to 290 FOOT-POUNDS and lockwire to strut (6).** Use torque wrench and mast support strut wrench.

4. **Torque eight nuts (2) to 600 INCH-POUNDS to secure strut (4).**

   a. Hold bolts (3).

   b. Torque nuts (2) to **600 INCH-POUNDS.** Use 3/8 drive torque wrench, and 3/8, 1/2 drive adapter.

5. **Remove universal sling from base (1).**

6. **Inspect (TI).**

7. **Install main transmission** (para 6-3-53).

8. **Service main transmission oil system** (para 1-5-21).

9. **Install main rotor swashplate** (para 11-3-34).

10. **Install main rotor head** (para 5-2-12).

11. **Install main rotor hub nut** (para 5-2-14).

12. **Install secondary main rotor scissor assembly** (para 11-3-41).

13. **Install load bearing main rotor scissor assembly** (para 11-3-40).

14. **Install main rotor pitch link assembly** (para 11-3-45).

15. **Install main rotor gearshaft** (para 6-3-41).

GO TO NEXT PAGE

16. **Install main rotor drive plate** (para 6-3-42).

17. **Install main rotor flexible support assembly** (para 6-3-39).

18. **Install main rotor drive plate cover** (para 6-3-38).

19. **Install main rotor bearing nut adapter and plug** (para 6-3-34).

20. **Install air data system (ADS) mast assembly** (para 6-3-35).

21. **Install main rotor blades** (para 5-2-5).

22. **Remove maintenance crane** (para 1-7-50).

23. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2-2-2).

24. **Secure access panels L200, R200, L230, and R230** (para 2-2-2).

END OF TASK

2-3-53. MIXER SUPPORT FITTING AND BOLT REMOVAL/INSTALLATION (AVIM) 2-3-53

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 3/4 Drive	5120-00-902-3550
Wrench Adapter	7-362110085

Materials/Parts:

	Lock washer
(E17)	Compound, Thread
(E68)	Brush

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
2-3-52	Mast base removed and mounted on holding fixture 7-262110030

A. **REMOVAL**

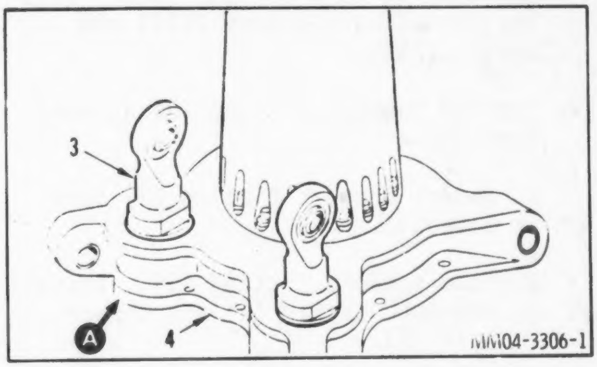
NOTE

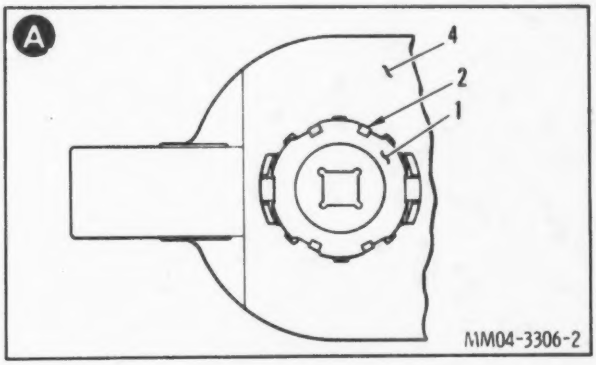
This task is typical for left or right mixer support fitting and bolt.

1. **Remove mixer support bolt (1).**
   a. Pry back tabs of lock washer (2) from support bolt (1).
   b. Hold mixer support fitting (3). Remove support bolt (1) and lock washer (2) from mast base (4). Use wrench adapter. Discard lock washer (2).
2. **Lift mixer support fitting (3) from mast base (4).**

B. **CLEANING**

Clean all removed, attaching parts, and surfaces (para 1-5-36).





GO TO NEXT PAGE

2-3-53. MIXER SUPPORT FITTING AND BOLT REMOVAL/INSTALLATION (AVIM) (cont) 2-3-53

C. INSPECTION

1. **Visually check mixer support fitting and attaching area for cracks and surface corrosion.** None allowed.

2. **Check support bolt for cracks and evidence of damage.** None allowed.

3. **Check area where thread run-out intersects thread relief.** Thread run-out must not be below minimum diameter of thread relief.

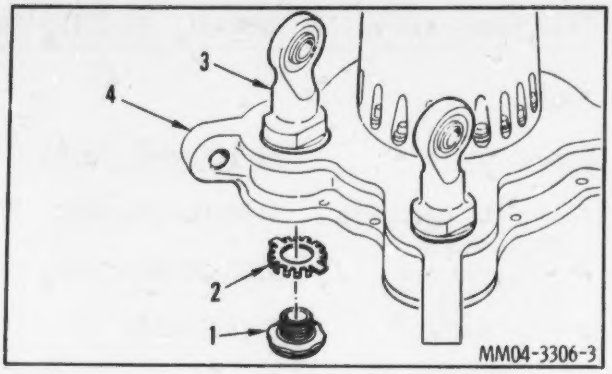
D. INSTALLATION

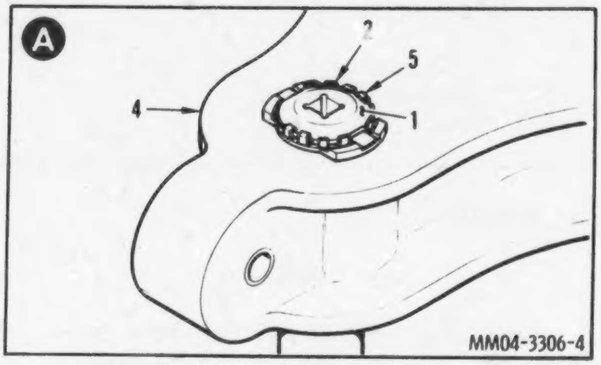
1. **Lubricate threads and bearing face of support bolt (1), internal threads of support fitting (3), and the bearing face of lock washer (2).** Use threading compound (E17) and brush, (E68).

2. **Install support fitting (3) in mast base (4).**

   a. Insert support fitting (3) into base (4).

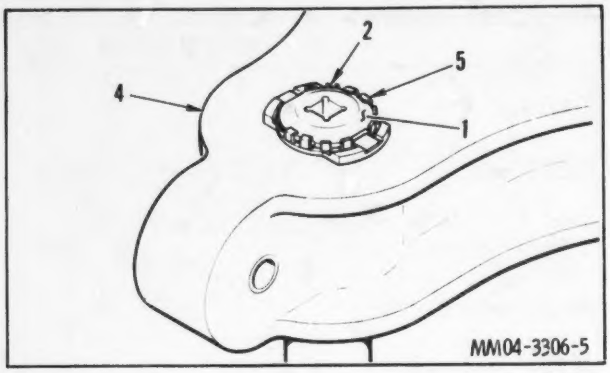
   b. Hold support fitting (3). Install new lock washer (2) and support bolt (1).





GO TO NEXT PAGE

2-3-53. MIXER SUPPORT FITTING AND BOLT REMOVAL/INSTALLATION (AVIM) (cont) 2-3-53



3. **Torque support bolt (1) to 255 FOOT-POUNDS.**

   a. Torque support bolt (1) to **255 FOOT-POUNDS.**

   b. Back off support bolt (1) to remove all preload.

   c. Retorque support bolt (1) to **255 FOOT-POUNDS.**

   d. Backoff support bolt (1) to remove all preload.

   e. Retorque bolt (1) to **255 FOOT-POUNDS.**

   f. Secure support bolt (1) by bending at least four tabs (5) of lock washer (2).

4. **Inspect (TI).**

5. **Install mast base** (2-3-52).

END OF TASK

2-3-54. LEFT OR RIGHT AMMUNITION MAGAZINE STRUT AND EYEBOLT REMOVAL/INSTALLATION 2-3-54

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR E. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

(E95) Adhesive

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

References:

TM 9-1090-208-23
TM 55-1500-204-25/1

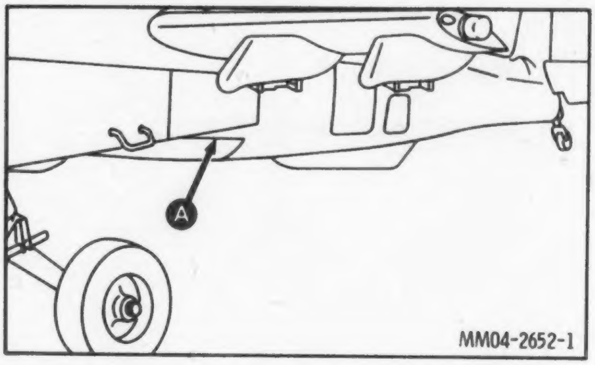
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
TM 9-1090-208-23	Ammunition storage magazine removed

A. REMOVAL

NOTE

This task is typical for left or right ammunition magazine strut.



GO TO NEXT PAGE

2-3-54. LEFT OR RIGHT AMMUNITION MAGAZINE STRUT AND EYEBOLT REMOVAL/INSTALLATION (cont) 2-3-54

1. **Remove strut (1).** Remove two nuts (2), washers (3), bolts (4), and washers (5). Remove strut (1).

2. **Remove eyebolt (6) from fitting (7).**

   a. Remove nut (8) from bolt (9).

   b. Hold eyebolt (6). Pull bolt (9) halfway out of fitting (7).

   c. Remove spring washer (10), washer (11), laminated washer (12), and eyebolt (6).

   d. Remove bolt (9) from fitting (7).

B. CLEANING

Wipe attaching areas of strut and eyebolt with a clean rag.

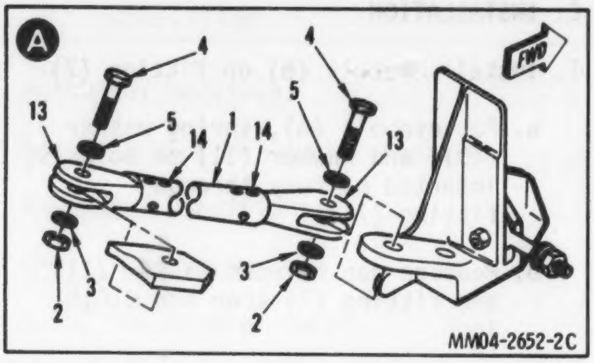
C. INSPECTION

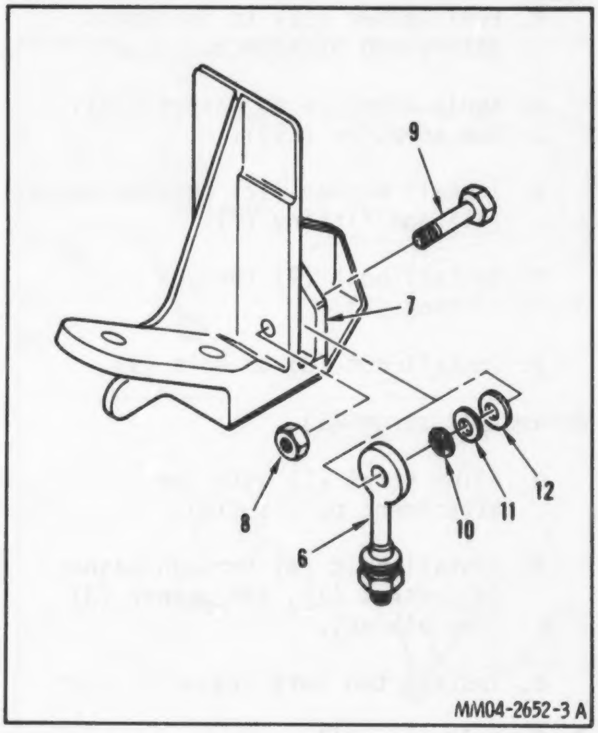
Check attaching areas of strut and eyebolt for excessive wear (para 2-3-2).

D. REPAIR

Repair strut (1) by replacing clevis (13).

a. Remove rivets (14) from strut (1) (TM 55-1500-204-25/1).





b. Separate clevis (13) from strut (1).

c. Clean strut (1) (para 1-5-36).

d. Apply adhesive (E95) to mating surfaces of clevis (13) and strut (1).

e. Install three rivets (14) into strut (1) (TM 55-1500-204-25/1).

GO TO NEXT PAGE

2-3-54. LEFT OR RIGHT AMMUNITION MAGAZINE STRUT AND EYEBOLT ASSEMBLY REMOVAL/INSTALLATION (cont) 2-3-54

E. INSTALLATION

1. **Install eyebolt (6) on fitting (7).**

   a. Put eyebolt (6), spring washer (10), and washer (11) on bolt (9) inserted halfway through fitting (7).

   b. Measure gap between washer (11) and fitting (7) then add 0.015 inch.

   c. Peel washer (12) to thickness determined by step b.

   d. Apply adhesive to washer (12). Use adhesive (E95).

   e. Install washer (12) between washer (11) and fitting (7).

   f. Install bolt (9) through fitting (7).

   g. Install nut (8) on bolt (9).

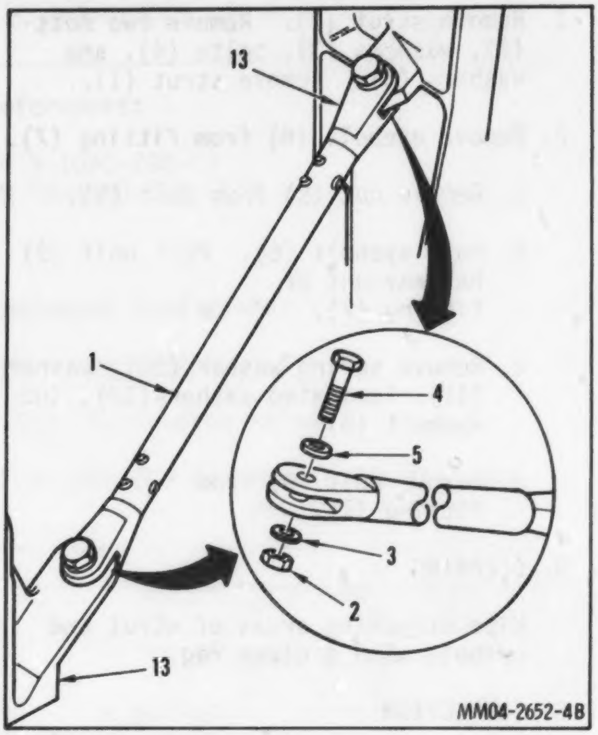
2. **Install strut (1).**

   a. Aline strut (1) with two attachment points (13).

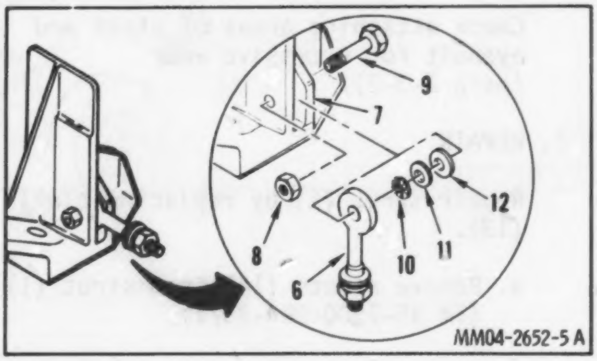
   b. Install bolt (4) through washer (5), strut (1), and washer (3) (two places).

   c. Install two nuts (2).

3. **Install ammunition storage magazine (TM 9-1090-208-23).**



MM04-2652-4B



MM04-2652-5 A

END OF TASK

2-3-55. FUSELAGE HANDHOLD REMOVAL/INSTALLATION 2-3-55

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

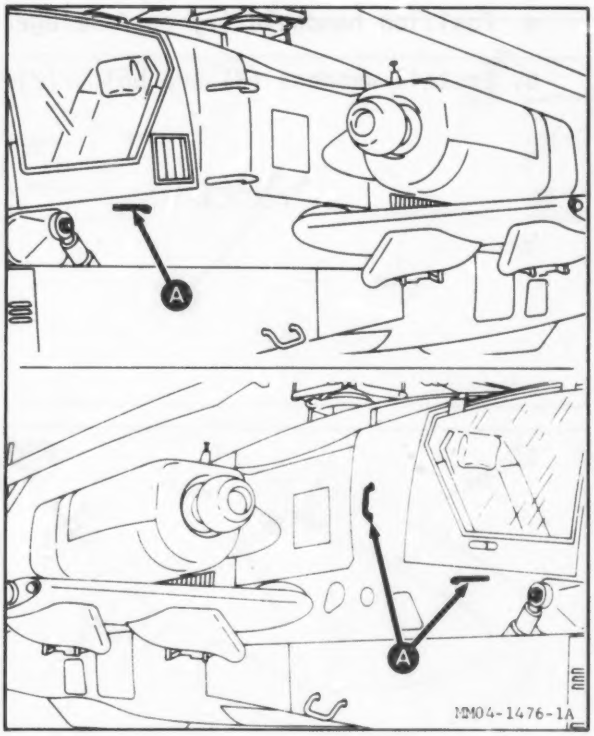
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer

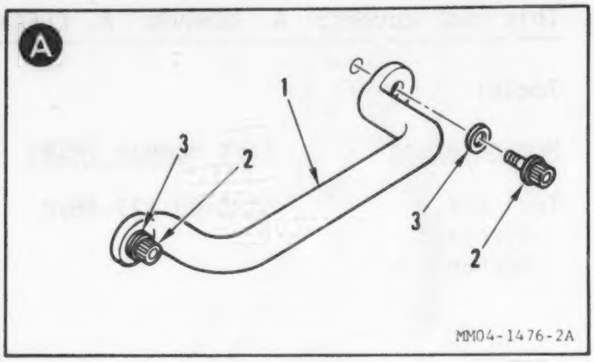
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



GO TO NEXT PAGE

2-3-55. FUSELAGE HANDHOLD REMOVAL/INSTALLATION (cont) 2-3-55



A. REMOVAL

Remove fuselage handhold (1).
Remove bolts (2) and washers (3).

B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSTALLATION

Install fuselage handhold (1).

a. Position handhold (1) on fuselage.

b. Install washers (3) and bolts (2).

END OF TASK

2-3-56. RIGHT FOOTSTEP REMOVAL/INSTALLATION 2-3-56

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

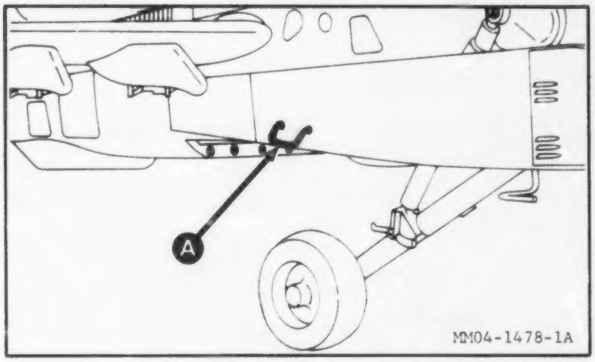
A. REMOVAL

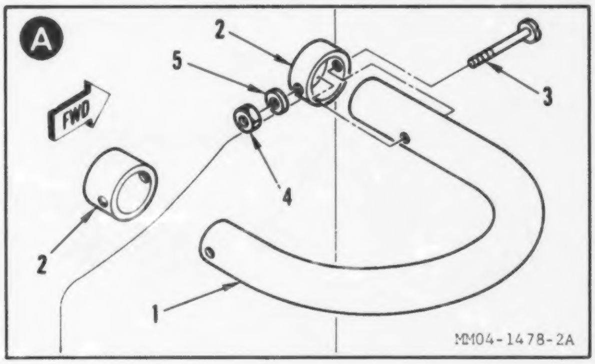
Remove right footstep (1) from tubes (2).

a. Hold two screws (3).

b. Remove two nuts (4) and two washers (5).

c. Pull footstep (1) straight out from two tubes (2) and remove.





B. CLEANING

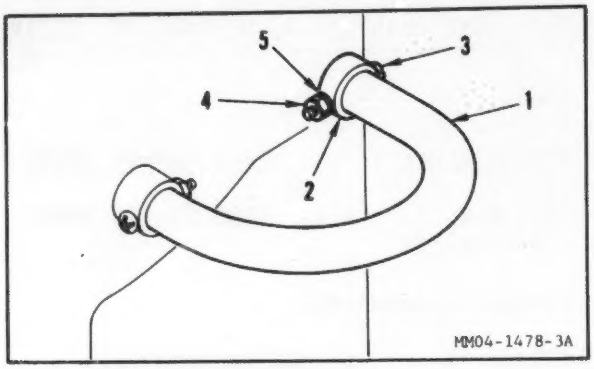
Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. **Check footstep and tubes for wear, deformation, cracks, and bolt holes elongation** (para 2-3-1).
2. **Check footstep for corrosion** (para 2-3-2).

GO TO NEXT PAGE

2-3-56. RIGHT FOOTSTEP REMOVAL/INSTALLATION (cont) 2-3-56



D. INSTALLATION

1. Install right footstep (1) in tubes (2).
   a. Position footstep (1) in two tubes (2).
   b. Insert two screws (3) through tubes (2) and footstep (1).
   c. Hold screws (2).
   d. Install two washers (5) and two nuts (4) on two screws (3).
2. Inspect (TI).

END OF TASK

2-3-57. LEFT CENTER FUSELAGE FOOTSTEP REMOVAL/INSTALLATION 2-3-57

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

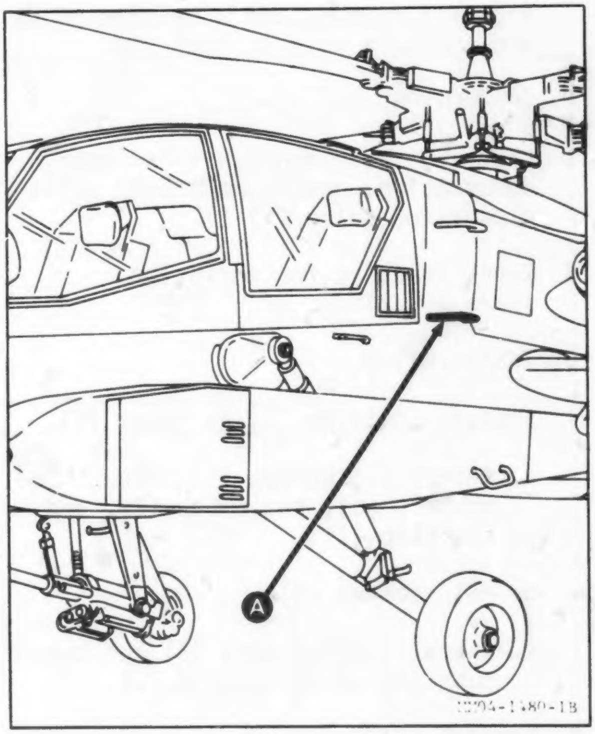
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

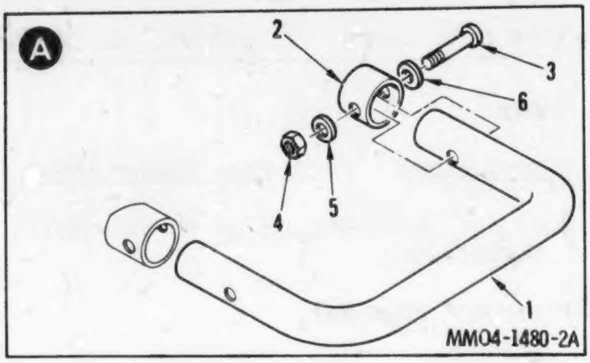
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



GO TO NEXT PAGE

2-3-57. LEFT CENTER FUSELAGE FOOTSTEP REMOVAL/INSTALLATION (cont) 2-3-57



A. REMOVAL

Remove left center fuselage footstep (1) from tubes (2).

a. Hold two screws (3).

b. Remove two nuts (4) and two washers (5).

c. Remove two screws (3) and two washers (6) from tubes (2) and footstep (1).

B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. **Check footstep and tubes for wear, deformation, cracks, and bolt holes elongation** (para 2-3-1).
2. **Check footstep for corrosion** (para 2-3-2).

D. INSTALLATION

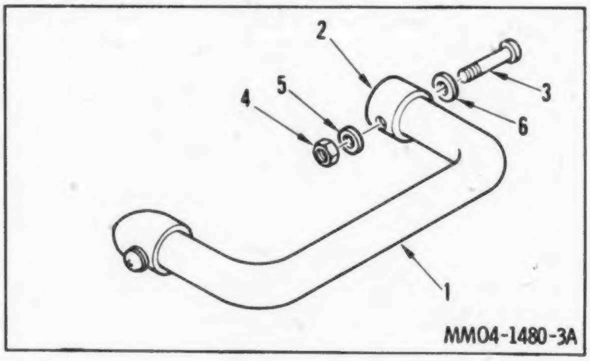
1. **Install footstep (1) in tubes (2).**

   a. Insert two screws (3) through two washers (6), two tubes (2), and footstep (1).

   b. Hold screws (3).

   c. Install two washers (5) and two nuts (4) on two screws (3).

2. **Inspect (TI).**



END OF TASK

2-3-58. WORK PLATFORM DOORS REMOVAL/INSTALLATION 2-3-58

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Drill, Pneumatic	5130-00-596-8420
Compressor Unit, Air	4310-00-075-3311

Materials/Parts:

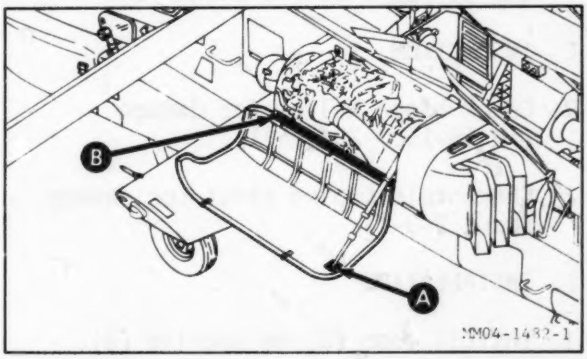
Cotter Pin

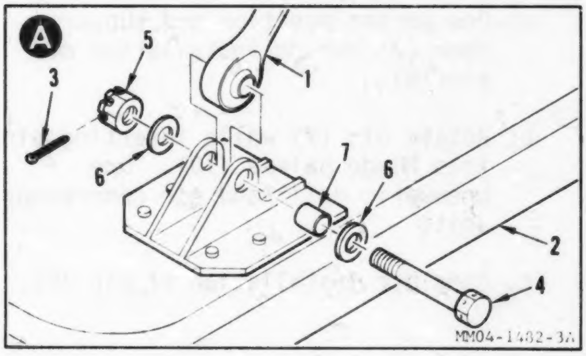
Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors LN1 and RN1 opened





A. REMOVAL

1. **Disconnect telescoping strut (1) from door (2).**
   a. Remove and discard cotter pin (3).
   b. Hold bolt (4).
   c. Remove nut (5) and washer (6).
   d. Remove bolt (4), washer (6), and bushing (7).

GO TO NEXT PAGE

2-3-58. WORK PLATFORM DOORS REMOVAL/INSTALLATION (cont) 2-3-58

2. Remove door (2) from nacelle (8).

   a. One person support door (2) during removal of hinge pin (9).

   b. Remove pin (9).

   c. Rotate pin (9) while removing pin from hinge halves (10). Use pneumatic drill and air compressor unit.

   d. Remove door (2) from nacelle (8).

B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. Check hinge halves for damage (TM 55-1500-204-25/1).

2. Check telescoping strut for damage (para 2-3-1).

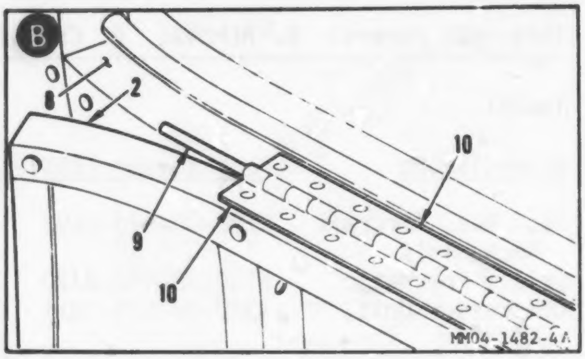
D. INSTALLATION

1. Install door (2) on nacelle (8).

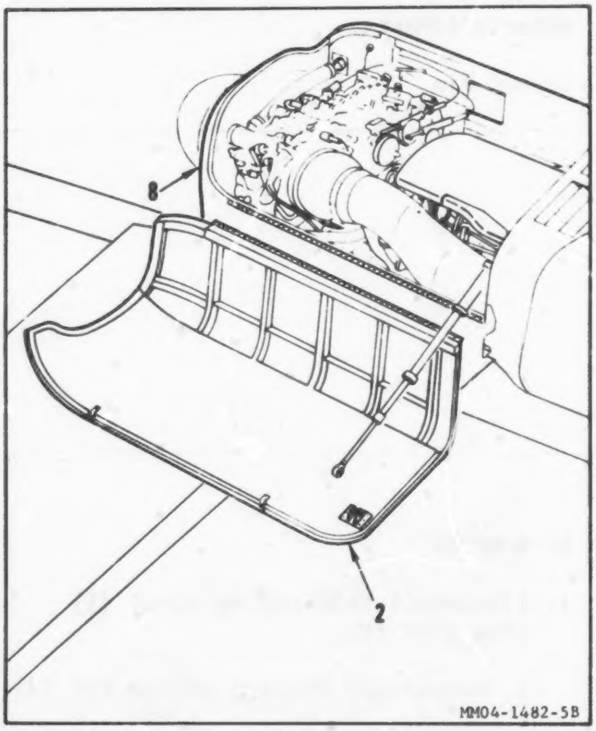
   a. One person position and support door (2) during installation of pin (9).

   b. Rotate pin (9) while inserting pin into hinge halves (10). Use pneumatic drill and air compressor unit.

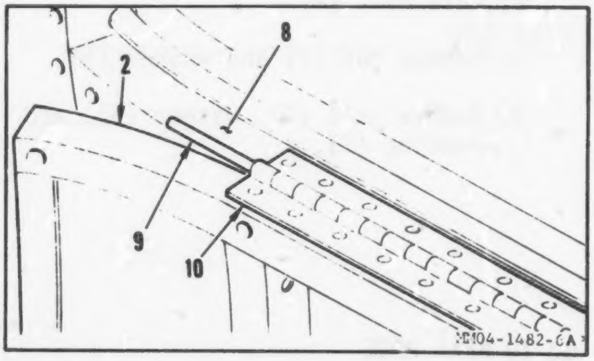
   c. Complete installation of pin (9).



MM04-1482-4A



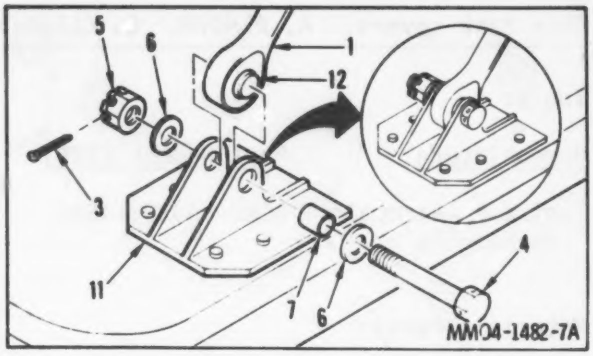
MM04-1482-5B



MM04-1482-6A

GO TO NEXT PAGE

2-3-58. WORK PLATFORM DOORS REMOVAL/INSTALLATION (cont) 2-3-58



2. **Connect telescoping strut (1) to door bracket (11).**
   - a. Position strut bearing (12) in bracket (11).
   - b. Insert bushing (7) into bracket (11) and through bearing (12).
   - c. Insert bolt (4) through washer (6), bracket (11), and bushing (12).
   - d. Hold bolt (4).
   - e. Install washer (6) and nut (5).
   - f. Install new cotter pin (3).
3. **Inspect (TI).**
4. **Secure access doors LN1 and RN1** (para 2-2-2).

END OF TASK

2-3-59. WORK PLATFORM DOOR STRUT REMOVAL/INSTALLATION 2-3-59

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

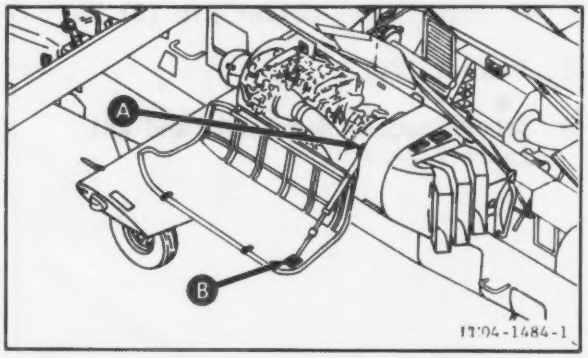
Cotter Pin (2)

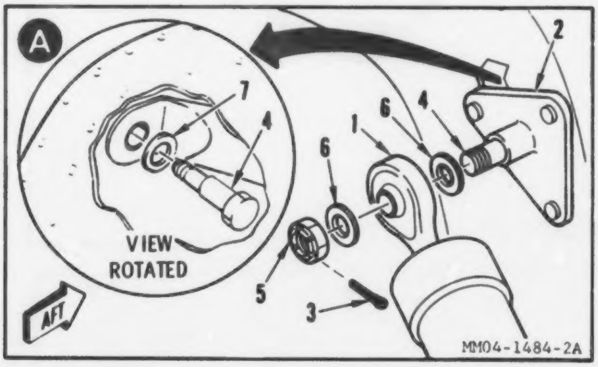
Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors LN1 and RN1 opened



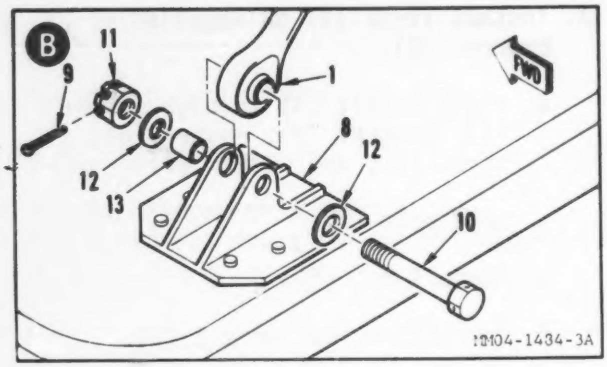


A. REMOVAL

1. **Remove work platform strut (1) from nacelle bracket (2).**
   a. Remove and discard cotter pin (3).
   b. Hold bolt (4).
   c. Remove nut (5) and two washers (6).
   d. Remove bolt (4) and washer (7).

GO TO NEXT PAGE

2-3-59. WORK PLATFORM DOOR STRUT REMOVAL/INSTALLATION (cont) 2-3-59



2. **Remove strut (1) from door bracket (8).**
   a. Remove and discard cotter pin (9).
   b. Hold bolt (10).
   c. Remove nut (11) and two washers (12).
   d. Remove bolt (10) and bushing (13).

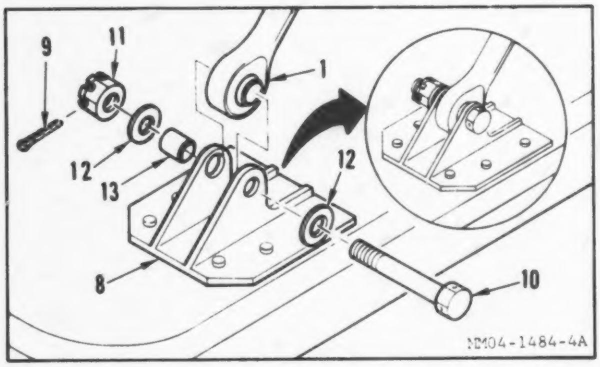
B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. **Check strut for damage** (para 2-3-1).
2. **Check door brackets for damage** (para 2-3-1).

D. INSTALLATION

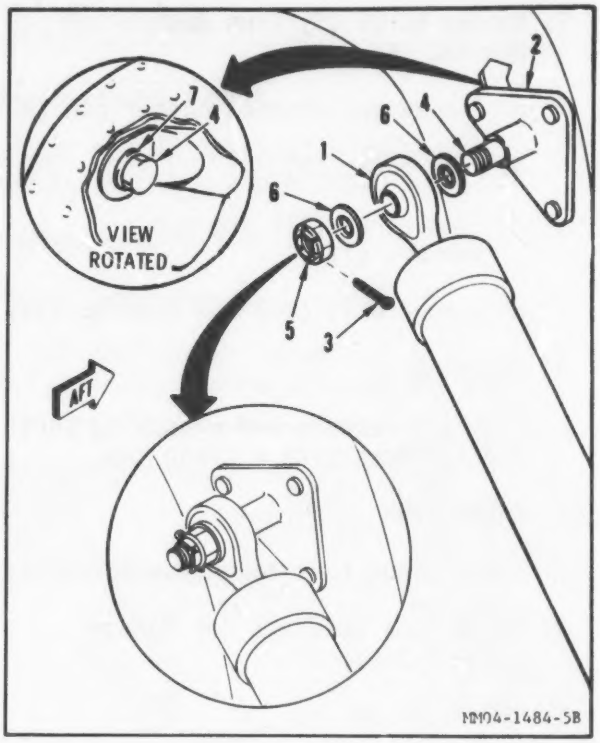


1. **Install strut (1) on door bracket (8).**
   a. Aline strut (1) with bracket (8). Install bushing (13).
   b. Insert bolt (10) through washer (12), bracket (8), and bushing (13).
   c. Hold bolt (10).
   d. Install washer (12) and nut (11).
   e. Install new cotter pin (9).

GO TO NEXT PAGE

2-3-59. WORK PLATFORM DOOR STRUT REMOVAL/INSTALLATION (cont) 2-3-59

2. **Install strut (1) on nacelle bracket (2).**
   - a. Install bolt (4) through washer (7), bracket (2), washer (6), strut (1), and washer (6).
   - b. Hold bolt (4).
   - c. Install nut (5).
   - d. Install new cotter pin (3).
3. **Inspect (TI).**
4. **Secure access door LN1 or RN1 (para 2-2-2).**



MM04-1484-5B

END OF TASK

2-3-60. WORK PLATFORM DOOR LATCH REPLACEMENT 2-3-60

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

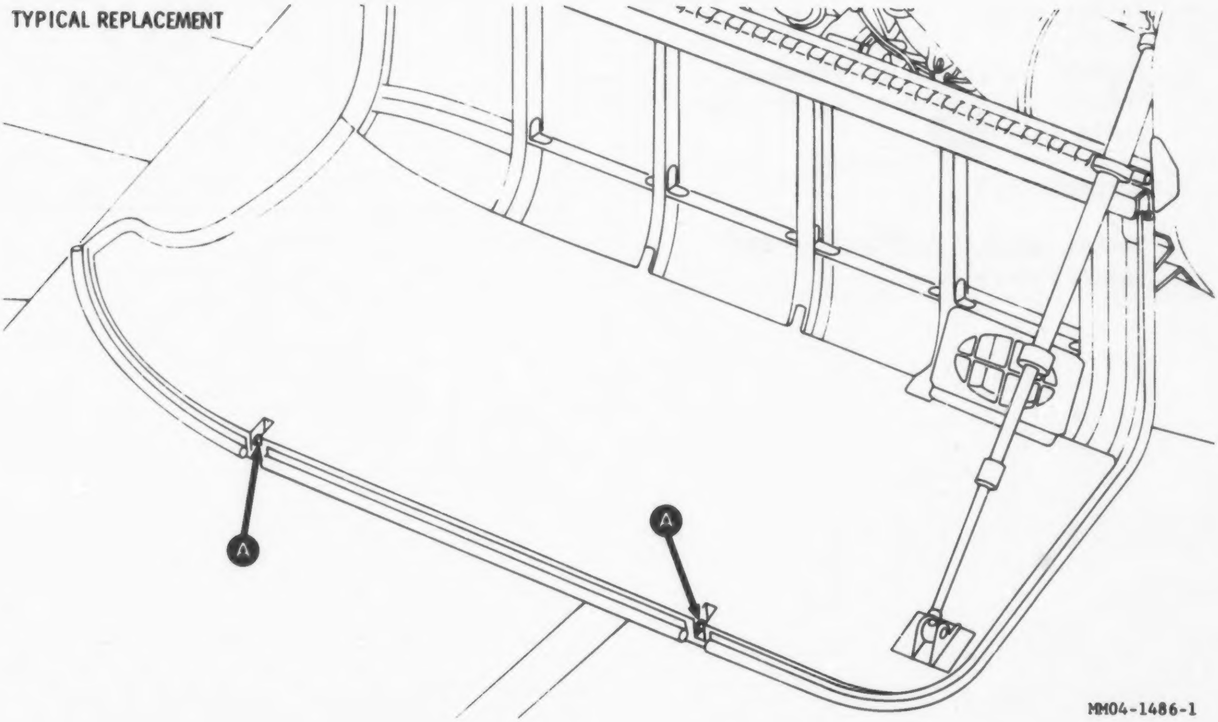
Nomenclature	Part Number (NSN)
Tool Kit, Airframe Repairer's	5180-00-323-4876

Personnel Required:

68G10 Aircraft Structural Repairer
66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors LN1 or RN1 opened



GO TO NEXT PAGE

2-3-60. WORK PLATFORM DOOR LATCH REPLACEMENT (cont) 2-3-60

A. REMOVAL

Remove work platform door latch (1) from frame (2). Remove two bolts (3) and two washers (4).

B. CLEANING

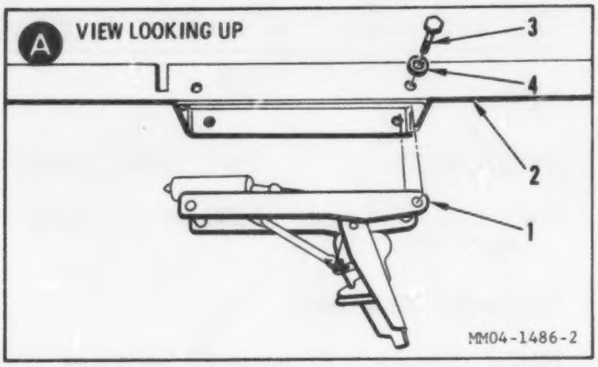
Wipe latch and surrounding area with a clean rag.

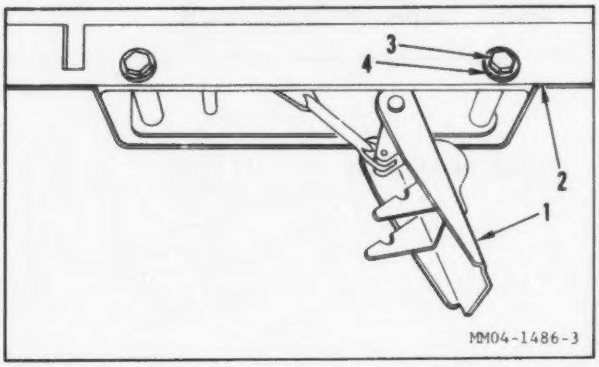
C. INSPECTION

1. Check mount area for cracks and elongated holes (para 2-3-1).
2. Check for corrosion (para 1-5-38).

D. INSTALLATION

1. Install latch (1) on frame (2). Install two washers (4) and two bolts (3)
2. Inspect (TI).
3. Secure access door LN1 or RN1 (para 2-2-2).





END OF TASK

2-3-61. MAIN LANDING GEAR FAIRING REMOVAL/INSTALLATION 2-3-61

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR E. INSTALLATION

Tools:

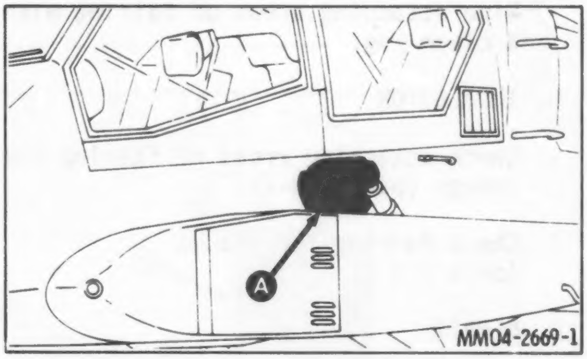
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

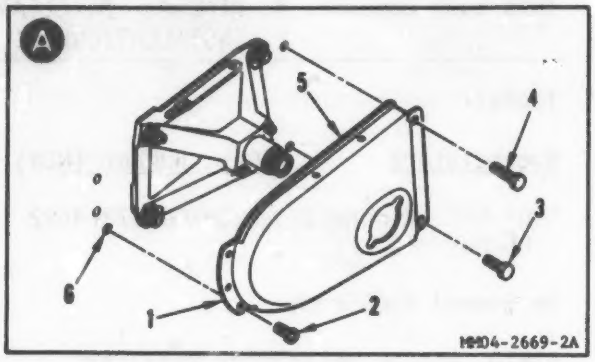
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
3-2-15	Main landing gear shock strut removed



GO TO NEXT PAGE

2-3-61. MAIN LANDING GEAR FAIRING REMOVAL/INSTALLATION (cont) 2-3-61



A. REMOVAL

NOTE

This task is typical for left or right fairing.

Remove main landing gear fairing (1).

a. Remove five screws (2), one bolt (3), and one bolt (4).

b. Remove fairing (1).

B. CLEANING

Wipe attaching areas of fairing with a clean rag.

C. INSPECTION

1. Check attaching areas of fairing for damage (para 2-3-2).
2. Check fairing for cracks (para 2-3-2).

D. REPAIR

Repair fairing (1) by replacing seal (5) (para 2-3-70).

E. INSTALLATION

1. Install fairing (1).
   a. Aline fairing (1) with five attachment points (6).
   b. Install five screws (2), one bolt (3), and one bolt (4).
2. Inspect (TI).
3. Install main landing gear shock strut (para 3-2-15).

END OF TASK

2-3-62. RIGHT FORWARD AVIONICS BAY AFT DOOR REMOVAL/INSTALLATION 2-3-62

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Punch, Drive Pin 7/64	5120-00-242-3435

Personnel Required:

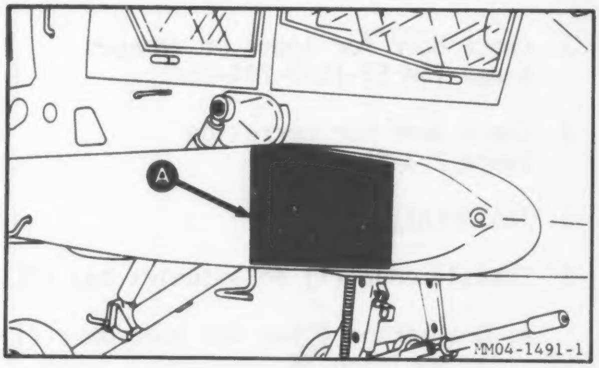
67R10	Attack Helicopter Repairer (2) One person to assist
66R30	Inspector/Supervisor

References:

TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



GO TO NEXT PAGE

2-3-62. RIGHT FORWARD AVIONICS BAY AFT DOOR REMOVAL/INSTALLATION (cont) 2-3-62

A. REMOVAL

Remove right forward aft door (1) from avionics bay (2)

a. Start hinge pin (3) out of hinge (4). Use punch.

b. Pull pin (3) out of hinge (4).

c. Unfasten seven latches (5) on door (1).

B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. Check door for loose or damaged hinge (TM 55-1500-204-25/1).

2. Check door for corrosion (para 2-3-2).

D. INSTALLATION

1. Install door (1) on avionics bay (2).

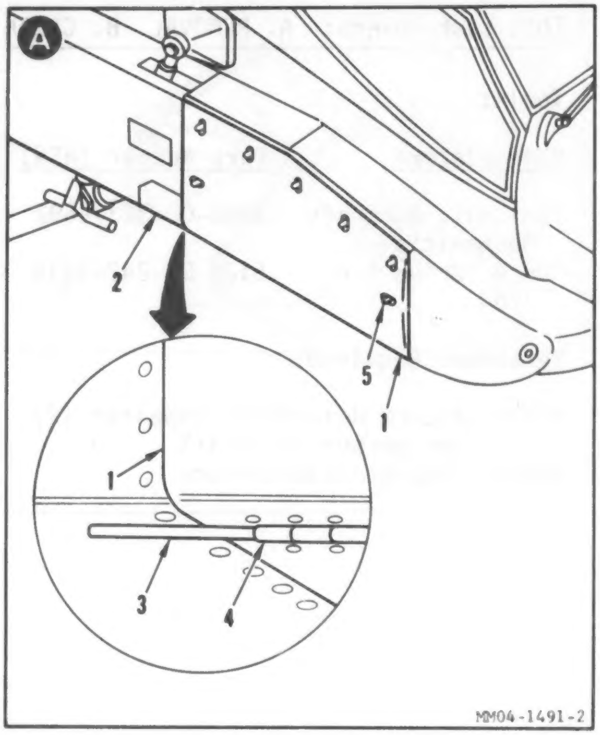
   a. One person aline and hold door (1) in position.

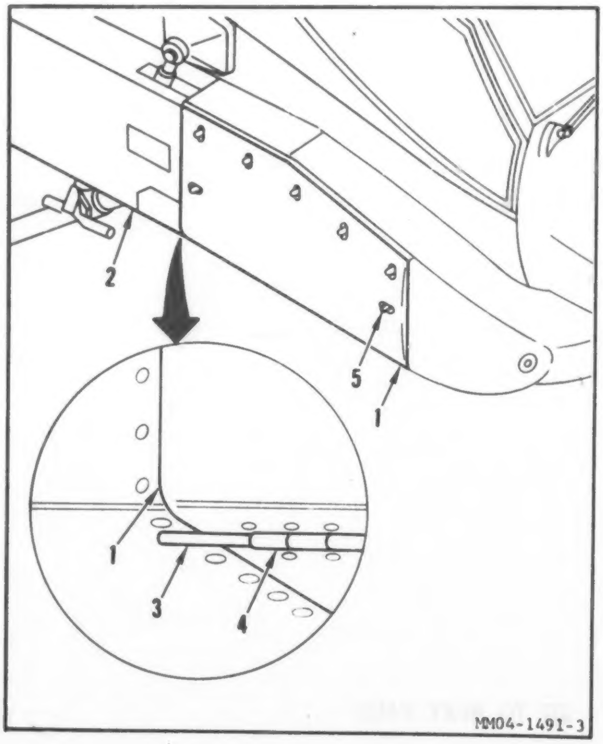
   b. Install pin (3) in hinge (4). Use drive pin punch.

   c. Crimp last loop at each end of hinge (4) (TM 55-1500-204-25/1).

   d. Close seven latches (5).

2. Inspect (TI).





END OF TASK

2-3-63. REPAIR AIRFRAME BY REPLACING DOOR LATCH 2-3-63

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Airframe Repairer's	5180-00-323-4876
Compressor, Air	4310-00-075-3311
Drill, Pneumatic Portable, 1/4 Drive	5120-00-576-8420
Riveter, Blind, Hand	5120-00-224-9296

Personnel Required:

68G10 Aircraft Structural Repairer
66R30 Inspector/Supervisor

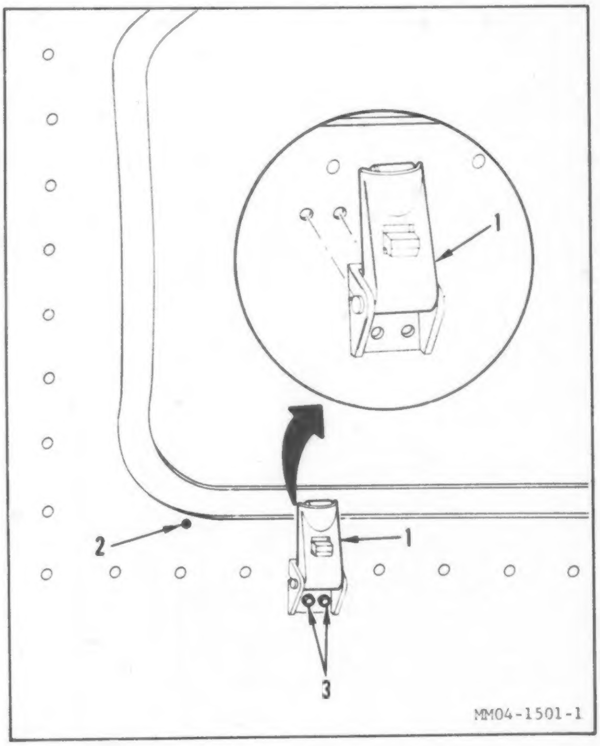
References:

TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. **Remove door latch (1) from airframe (2).**
   a. Make center mark in two rivet heads (3).
   b. Drill out two rivet heads (3). Use air compressor and pneumatic drill.
   c. Punch out two rivet shanks.



GO TO NEXT PAGE

2-3-63. REPAIR AIRFRAME BY REPLACING DOOR LATCH (cont) 2-3-63

2. Install door latch (1) on airframe (2).

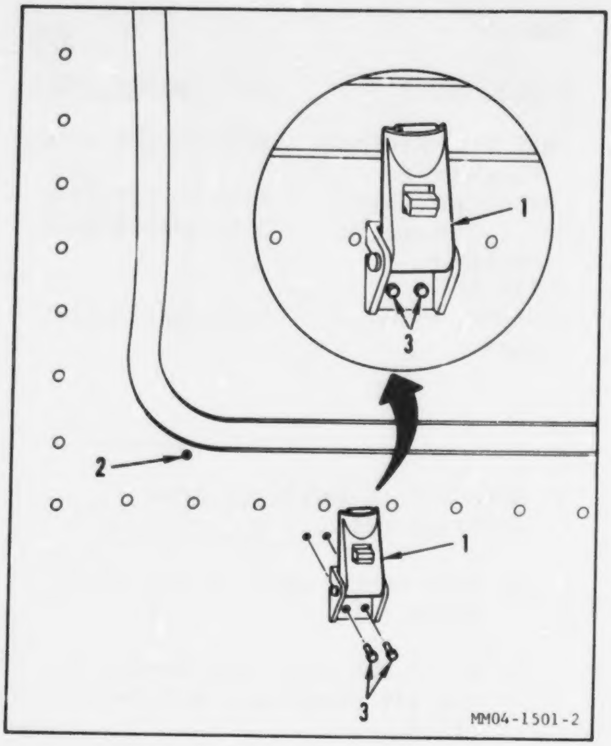
NOTE

Type and method of riveting will vary with latch location.

   a. Aline latch (1) on airframe (2).

   b. Install two rivets (3). Use compressor and blind hand riveter (if required) (TM 55-1500-204-25/1).

3. Inspect (TI).



END OF TASK

2-3-64. ACCESS DOOR LATCH REPLACEMENT 2-3-64

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Airframe Repairer's	5180-00-323-4876
Compressor, Air	4310-00-075-3311
Drill, Pneumatic Portable, 1/4 Drive	5120-00-576-8420
Riveter, Blind, Hand	5120-00-224-9296

Personnel Required:

68G10	Aircraft Structural Repairer
66R30	Inspector/Supervisor

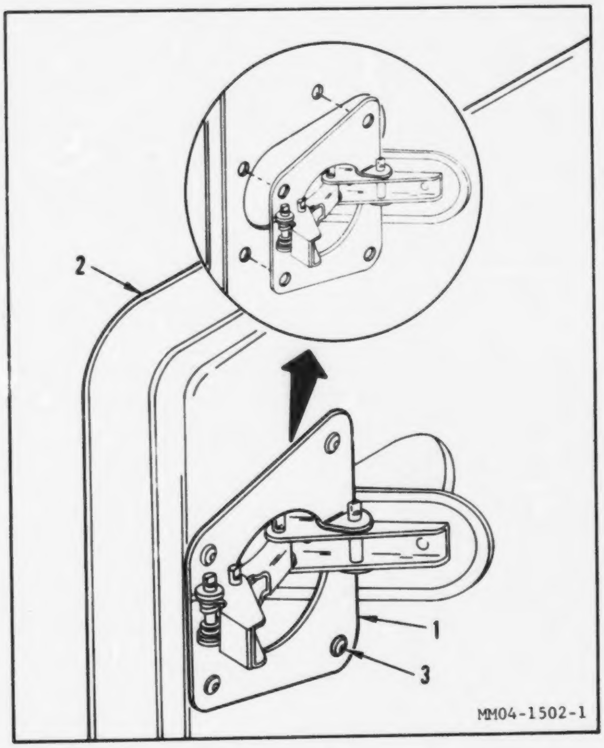
References:

TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. **Remove latch (1) from door (2).**
    a. Make drill start mark in center of rivet heads (3).
    b. Drill out heads of rivets (3). Use air compressor and pneumatic drill.
    c. Drive out shanks of rivets (3).



GO TO NEXT PAGE

best copy available

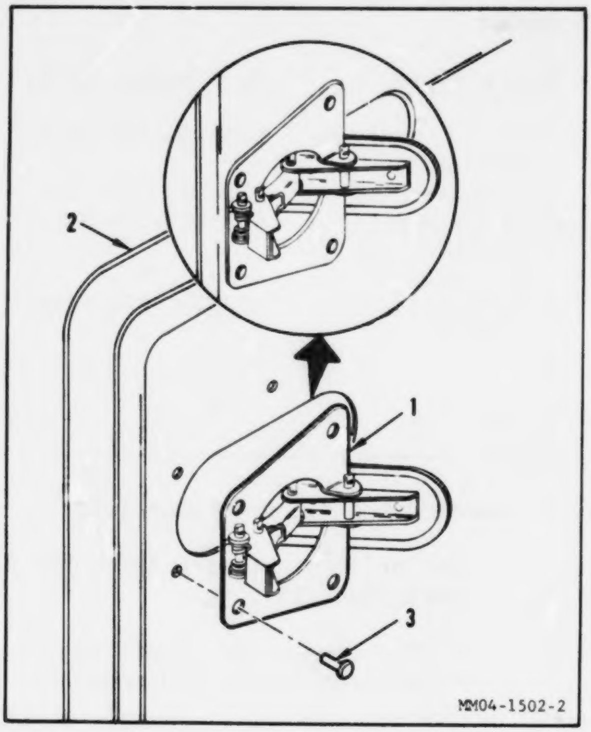
2-3-64. ACCESS DOOR LATCH REPLACEMENT (cont) 2-3-64

2. **Install latch (1) on door (2).**

   a. Aline latch (1) on door (2).

   b. Install rivets (3) in alined holes (TM 55-1500-204-25/1).

3. **Inspect (TI).**



END OF TASK

2-3-65. REPAIR AIRFRAME BY REPLACING CAMLOC RECEPTACLE 2-3-65

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Airframe Repairer's	5180-00-323-4876
Compressor Unit, Air	4310-00-075-3311
Drill, Pneumatic Portable, 1/4 Drive	5120-00-576-8420

Personnel Required:

68G10	Aircraft Structural Repairer
66R30	Inspector/Supervisor

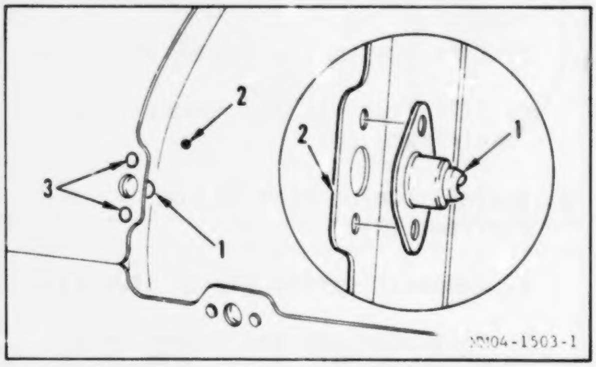
References:

TM 55-1500-204-25/1

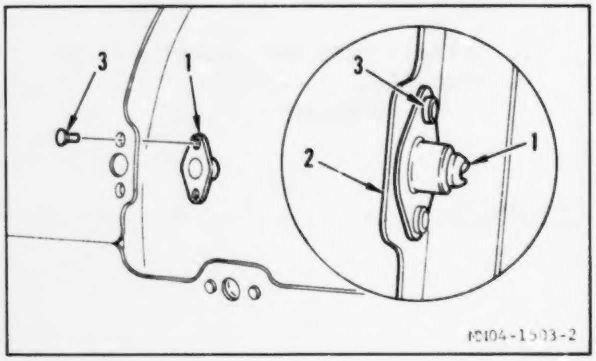
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. **Remove receptacle (1) from airframe (2).**
   a. Make drill center start marks in heads of two rivets (3).
   b. Drill out heads of two rivets (3). Use air compressor and pneumatic drill.
   c. Drive out shanks of two rivets (3).



2. **Install receptacle (1) on airframe (2).**
   a. Aline receptacle (1) on airframe (2).
   b. Install two rivets (3) in airframe (2) and receptacle (1). Use air compressor (TM 55-1500-204-25/1).
3. **Inspect (TI).**



END OF TASK

2-3-66. CAMLOC STUD REPLACEMENT 2-3-66

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Airframe Repairer's	5180-00-323-4876

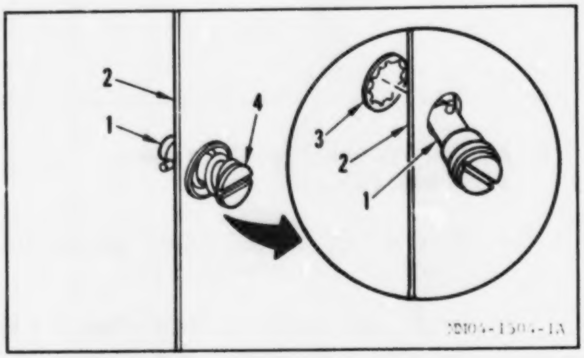
Personnel Required:

68G10 Aircraft Structural Repairer

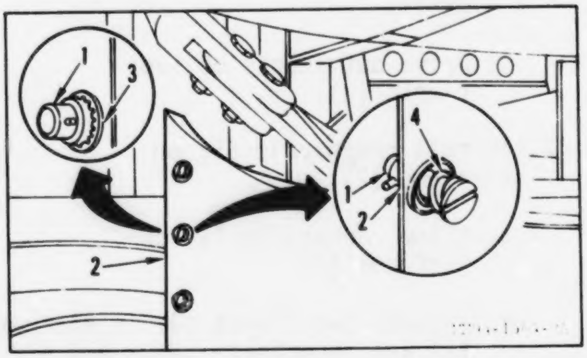
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. **Remove camloc stud (1) from airframe (2).**
   a. Remove retainer washer (3) from stud (1).
   b. Compress spring (4) of stud (1).
   c. Tilt stud (1) and remove from airframe (2).



2. **Install camloc stud (1) on airframe (2).**
   a. Compress spring (4) of stud (1).
   b. Tilt stud (1) and insert in airframe (2).
   c. Install retainer washer (3) on stud (1).



END OF TASK

2-3-67. CAMLOC STUD (WITH PACKINGS) REPLACEMENT 2-3-67

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Airframe Repairer's	5180-00-323-4876

Materials/Parts:

Packings (2)

Personnel Required:

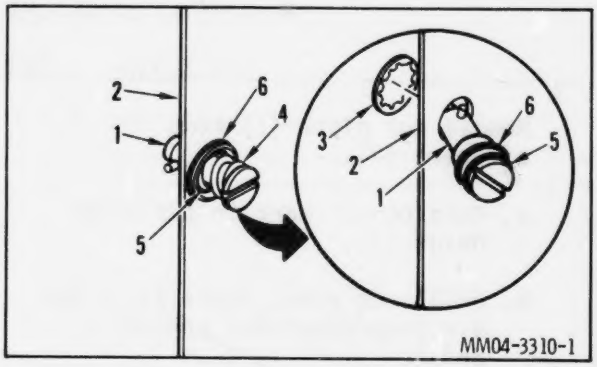
68G10 Aircraft Structural Repairer

Equipment Conditions:

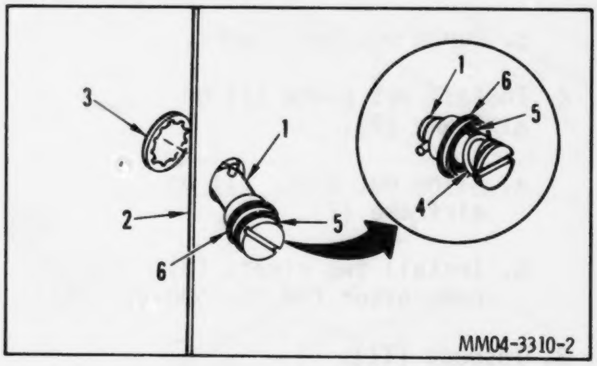
Ref	Condition
1-7-2	Helicopter safed

---

1. **Remove camloc stud (1) from airframe (2).**
   a. Remove retainer washer (3) from stud (1).
   b. Compress spring (4) of stud (1).
   c. Tilt and remove stud (1) and two packings (5) and (6) from airframe (2).



2. **Install camloc stud (1) on airframe (2).**
   a. Install two new packings (5) and (6) on camloc stud (1).
   b. Compress spring (4) of stud (1).
   c. Tilt stud (1) and insert in airframe (2).
   d. Install retainer washer (3) on stud (1).



END OF TASK

2-3-68. REPAIR AIRFRAME BY REPLACING NUTPLATE 2-3-68

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Airframe Repairer's	5180-00-323-4876
Compressor, Air	4310-00-075-3311
Drill, Pneumatic, Portable, 1/4 Drive	5120-00-596-8420

Personnel Required:

68G10 Aircraft Structural Repairer
66R30 Inspector/Supervisor

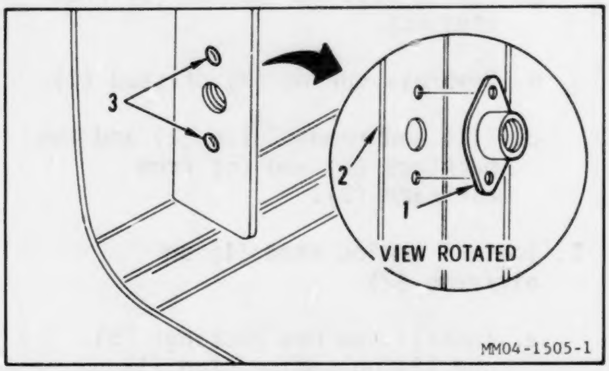
References:

TM 55-1500-204-25/1

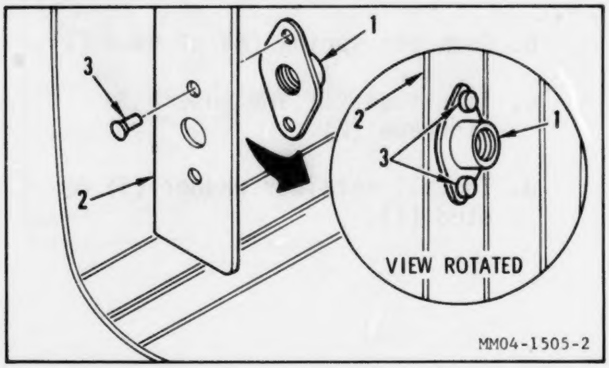
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. **Remove nut plate (1) from airframe (2).**
   a. Make center mark in two rivet heads (3).
   b. Drill out rivet heads (3). Use air compressor and pneumatic drill.
   c. Punch out two shanks.
2. **Install nut plate (1) on airframe (2).**
   a. Aline nut plate (1) on airframe (2).
   b. Install two rivets (3). Use air compressor (TM 55-1500-204-25/1).
3. **Inspect (TI).**



MM04-1505-1



MM04-1505-2

END OF TASK

2-3-69. REPAIR AIRFRAME BY REPLACING HINGE HALF 2-3-69

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Airframe Repairer's	5180-00-323-4876
Compressor, Air	4310-00-075-3311
Drill, Pneumatic Portable, 1/4 Drive	5120-00-576-8420

Materials/Parts:

Hinge
Pin
(E19) Primer

Personnel Required:

68G10 Aircraft Structural Repairer
66R30 Inspector/Supervisor

References:

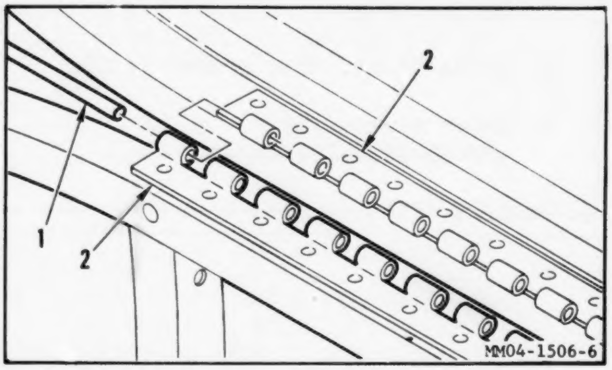
TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

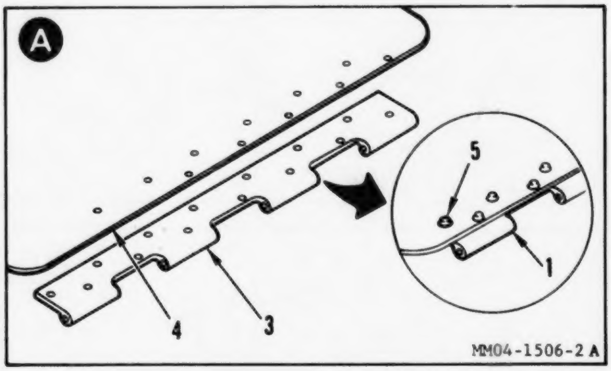
A. REMOVAL

1. **Remove hinge pin (1) from hinge (2).**
   a. Start hinge pin (1) out of hinge (2). Use punch.
   b. Rotate pin (1) while removing pin from hinge (2). Use pneumatic drill and air compressor.



B. CLEANING

Wipe all removed and attaching parts with a clean rag.



C. INSPECTION

Check hinge halves and pin for damage (TM 55-1520-04-25/1).

1. **Remove hinge half (3) from door (4).**
   a. Mark hinge half (3) location on door (4).
   b. Make center marks in rivet heads (5).
   c. Drill out rivet heads (5). Use air compressor and pneumatic drill.
   d. Drive out rivet (5) shanks.

GO TO NEXT PAGE

2-3-69. REPAIR AIRFRAME BY REPLACING HINGE HALF (cont) 2-3-69

2. **Install new hinge half (3) on door (4).**

   a. Cut new hinge half (3) to proper length. Use old hinge half (3) for pattern.

   b. Aline hinge half (3) with scriber marks on door (4).

   c. Clamp hinge half (3) on door (4).

   d. Mark rivet hole locations on hinge half (3).

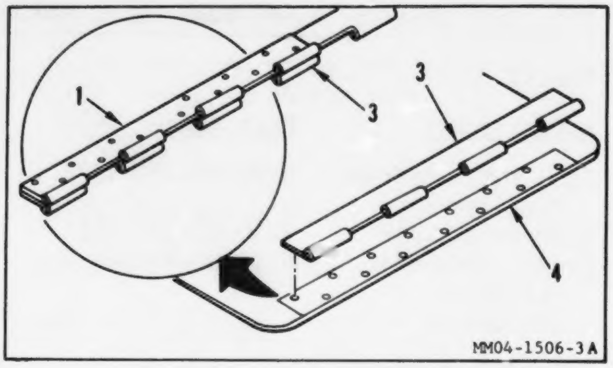
   e. Drill rivet holes. Use pneumatic drill.

   f. Deburr holes.

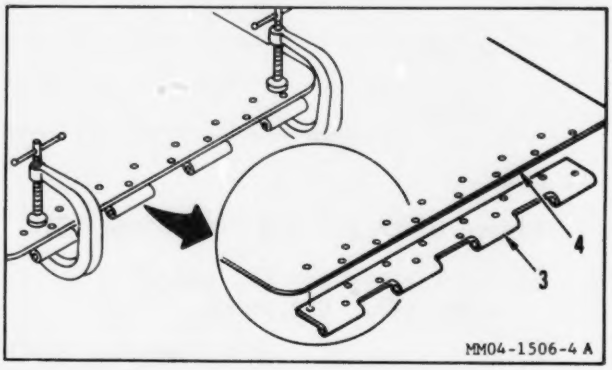
   g. Prime holes. Use primer (E19).

   h. Drive rivets (5) (TM 55-1500-204-25/1).

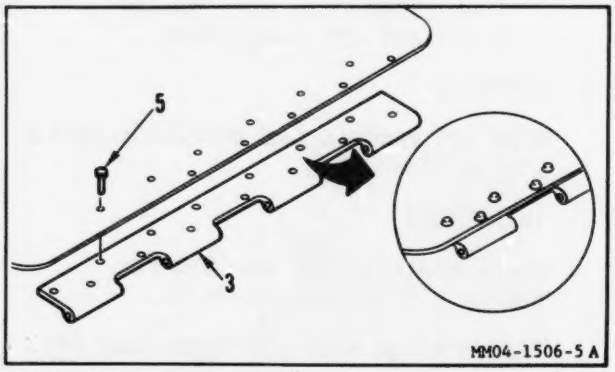
3. **Inspect (TI).**



MM04-1506-3 A



MM04-1506-4 A



MM04-1506-5 A

GO TO NEXT PAGE

2-3-69. REPAIR AIRFRAME BY REPLACING HINGE HALF (cont) 2-3-69

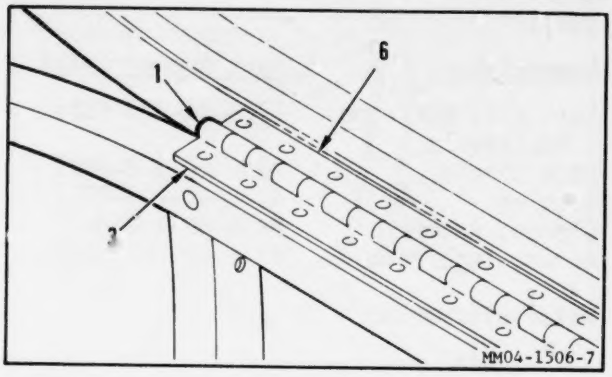
NOTE

When hinge pin is being replaced, the pin length must be 1/8 to 3/16 of an inch shorter than the hinge. If pin is too long, remove excess.

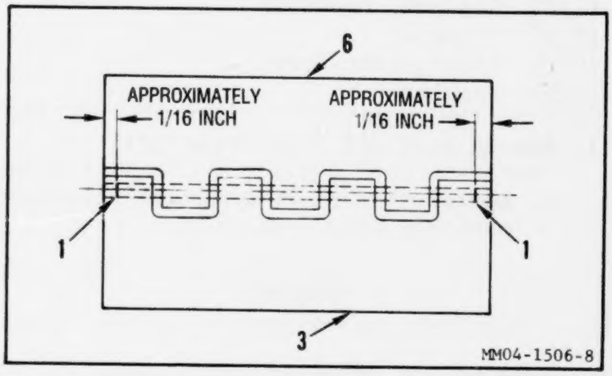
D. INSTALLATION

1. Install hinge pin (1).
   a. Aline hinge halves (3) and (6).
   b. Rotate pin (1) while inserting pin into hinge halves (3) and (6). Use pneumatic drill and air compressor.
   c. Complete hinge pin installation Use punch.
   d. Hinge pin (1) must be centered in hinge halves (3) and (6) approximately 1/6 inch from end of hinge (3) and (6).
   e. Stake hinge pin in four places. Use center punch.
   f. If pin has been previously staked rotate stakes 90 degrees.
2. Inspect (TI).

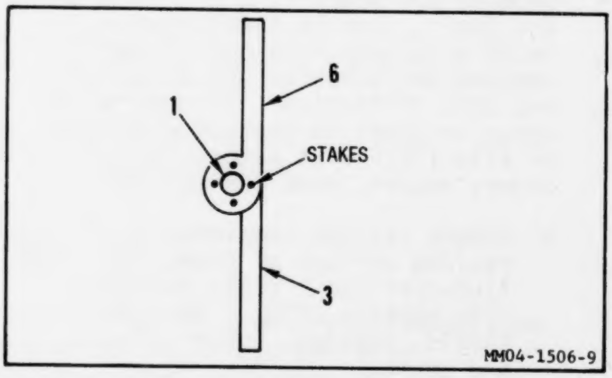
END OF TASK



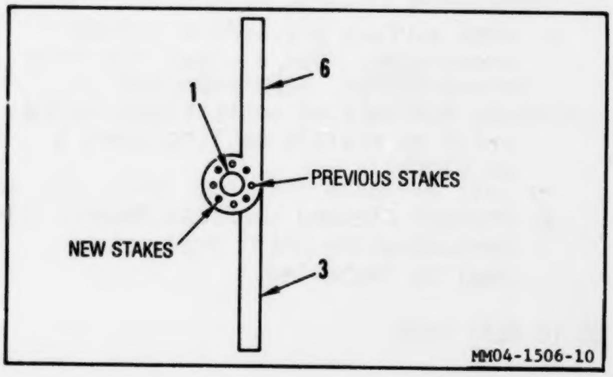
MM04-1506-7



MM04-1506-8



MM04-1506-9



MM04-1506-10

2-3-70. CANOPY SIDE PANEL SEAL REPLACEMENT 2-3-70

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Airframe Repairer's	5180-00-323-4876
Face Shield	4240-00-202-9473
Goggles	4240-00-203-0317
Gloves, Rubber	8415-00-266-8677
Apron, Impermeable	8415-00-082-6108

Materials/Parts:

	Seal
(E12)	Sealant, Adhesive
(E19)	Primer
(E32)	Cloth, Lint-Free
(E33)	Naphtha

Personnel Required:

68G10	Aircraft Structural Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. Remove seal (1) from frame (2).

a. Remove as much of old seal (1) as possible from frame (2).

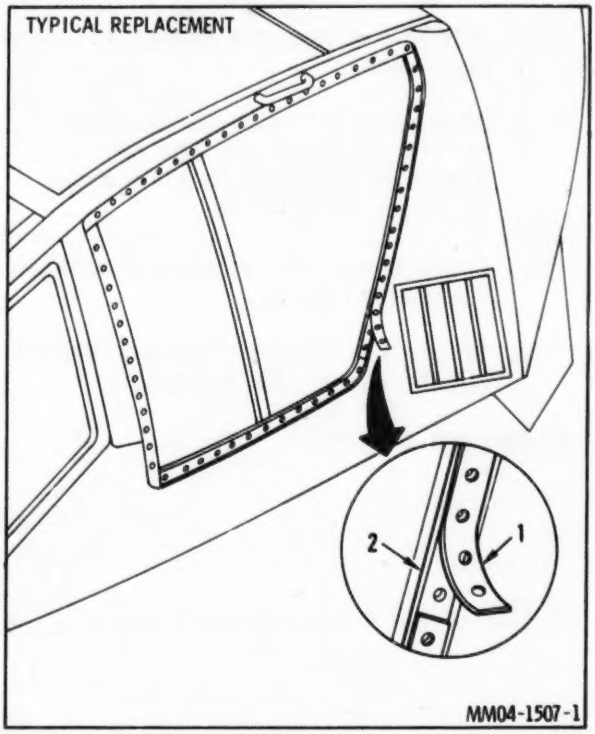
WARNING

Naphtha and adhesive are flammable and toxic. Use in a well ventilated area away from open flames. Naphtha and adhesive can cause eye and skin irritation. If naphtha or adhesive comes in contact with eyes or skin flush with water. If injury occurs, seek medical aid.

b. Remove residue remaining on sealing surface of frame (2). Use lint-free cloth (E32) moistened with naphtha (E33). Wear face shield, goggles, rubber gloves, and apron.

c. Wipe surface dry before solvent evaporates. Use a clean lint-free cloth (E32). Make repeated applications of solvent and wiping until no visible soiling appears on cloth.

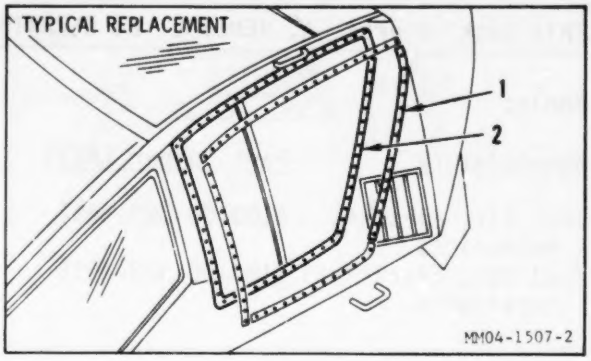
d. Protect cleaned surfaces from contamination until replacement seal is installed.



GO TO NEXT PAGE

2-3-70. CANOPY SIDE PANEL SEAL REPLACEMENT (cont) 2-3-70

2. **Install seal (1) on frame (2).**



   a. Apply thin even coat of primer (E19) to sealing surfaces of frame (2) and allow to dry.

CAUTION

This task is for general application, using Type I, Class 1 silicone sealant. This sealant may cause corrosion of electrical components. Silicone sealants are not suitable for use in areas which may come in contact with lubricating oils or JP fuels.

NOTE

Type I, Class 1 silicone sealant has a work life of 20 minutes from the time it is exposed to air. Application of sealant, including clean-up, must be completed with this 20-minute time.

NOTE

Canopy panel seals are sectional and consist of four, five, or six sections depending upon application.

   b. Mix adhesive sealant (E12) according to package directions and apply to surfaces to be joined. Work out bubbles. Spread sealant to uniform thickness of **0.015-INCH.**

   c. Position seal (1) in cavity (2) with all holes and cutouts alined. Apply firm uniform pressure. Do not shift the sealed surfaces.

WARNING

Naphtha and adhesive are flammable and toxic. Use in a well ventilated area away from open flames. Naphtha and adhesive can cause eye and skin irritation. If naphtha or adhesive comes in contact with eyes or skin flush with water. If injury occurs, seek medical aid.

   d. Clean up excess adhesive sealant around joints and seams. Use lint-free cloth (E32) lightly moistened with naphtha (E33). Wear face shield, goggles, rubber gloves, and apron.

   e. Do not move joined components for one hour after applying adhesive sealant (E12) (or until sealant is tack-free to the touch).

3. **Inspect (TI).**

END OF TASK

2-3-71. CPG FIXED GLARESHIELD REMOVAL/INSTALLATION 2-3-71

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Tool Kit, Electrical Repairer's	5180-00-323-4915

Personnel Required:

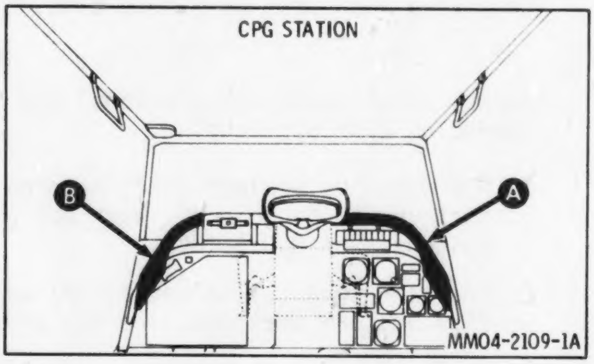
68F10	Aircraft Electrician
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-1500-204-25/1
TM 9-1230-476-20-1

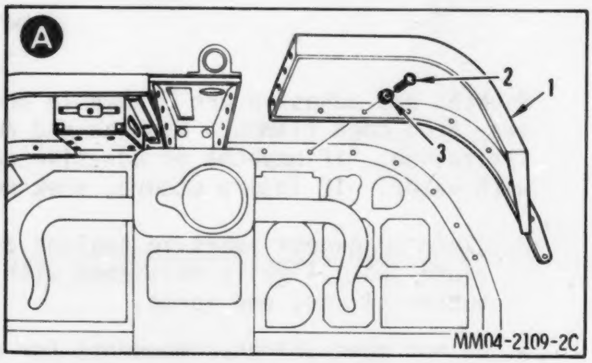
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
9-7-4	CPG master caution/warning panel detached
12-5-8	CPG FIRE EMERG panel detached
9-6-18	CPG flood lights electrical harness detached



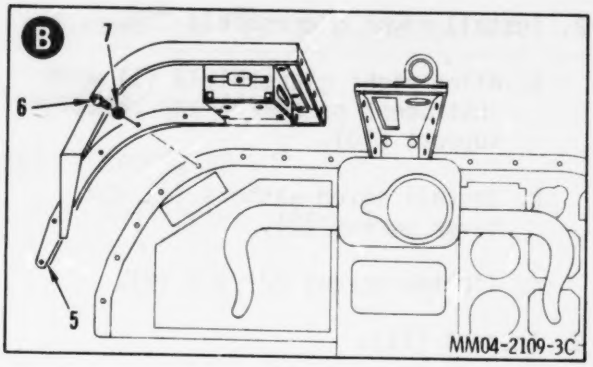
A. REMOVAL

1. **Remove CPG right glareshield (1).** Remove seven screws (2) and seven washers (3).



GO TO NEXT PAGE

2. **Remove CPG left glareshield (5).** Remove eight screws (6) and eight washers (7).



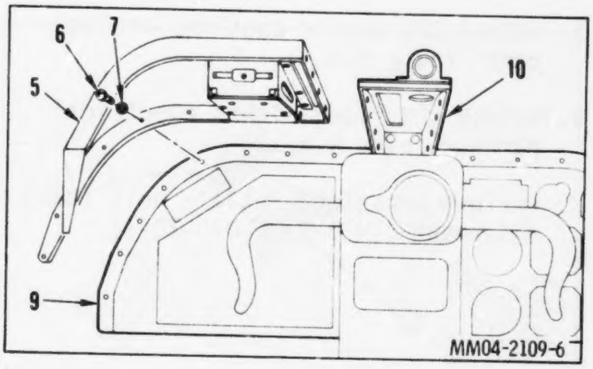
B. **CLEANING**

Wipe all removed and attaching parts and surfaces with a clean rag.

C. **INSPECTION**

1. **Check glareshield for cracks.** Cracks up to 1/2 inch are allowed. Cracks over 1/2 inch, replace glareshield.

2. **Check glareshield mounting holes for stripped threads** (TM 55-1500-204-25/1).



D. **INSTALLATION**

1. **Install left glareshield (5).**

   a. Aline left glareshield (5) with instrument panel (9) and boresight support (10).

NOTE

Insert all screws and bolts before tightening.

   b. Install eight washers (7) and eight screws (6).

GO TO NEXT PAGE

2-3-71. CPG FIXED GLARESHIELD REMOVAL/INSTALLATION (cont) 2-3-71

2. **Install right glareshield (1).**

   a. **Aline** right glareshield (1) with instrument panel (9) and boresight support (10).

   b. Install seven washers (3) and seven screws (2).

   c. Tighten screws (2) and (6).

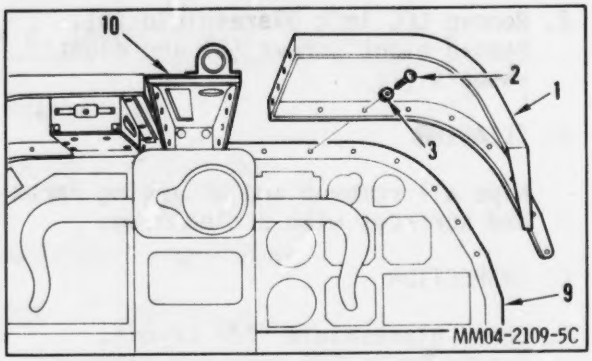
3. **Inspect (TI).**

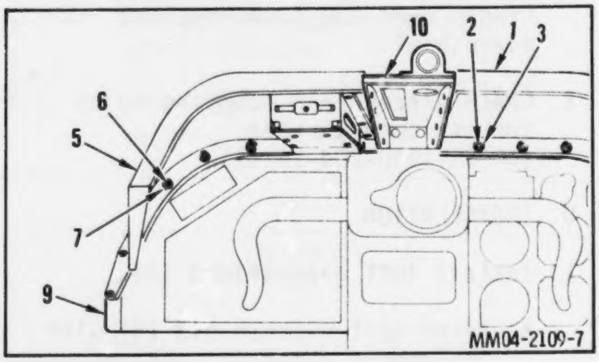
4. **Attach CPG FIRE EMERG panel** (para 12-5-9).

5. **Attach CPG master caution/warning panel** (para 9-7-4).

6. **Attach CPG flood lights electrical harness** (para 9-6-18).

7. **Perform boresight reticle unit (BRU) alinement** (TM 9-1230-476-20-1).





END OF TASK

2-3-72. CPG GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION 2-3-72

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Equipment Conditions:

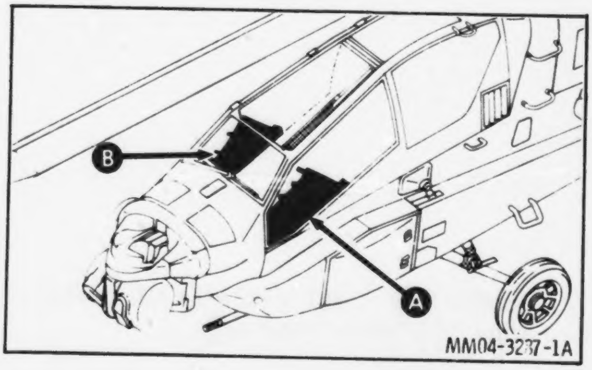
Ref	Condition
1-7-2	Helicopter safed

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

NOTE

This task is typical for left or right side except where noted.

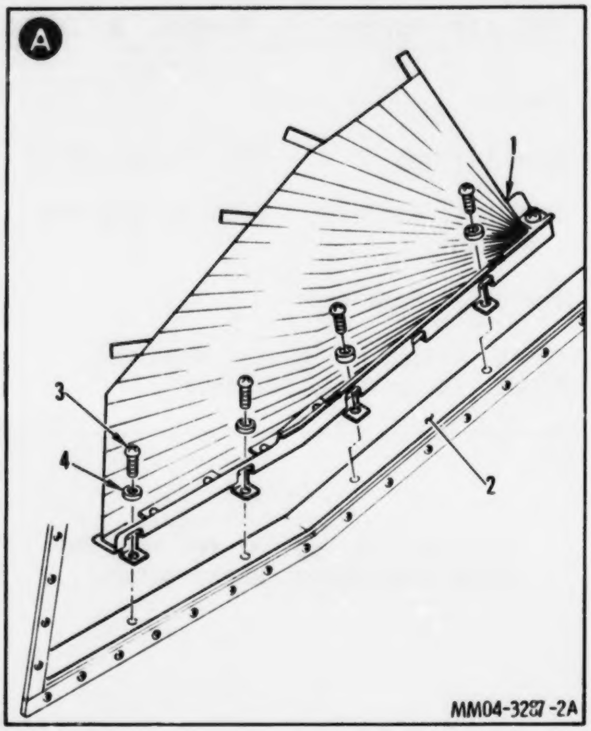


GO TO NEXT PAGE

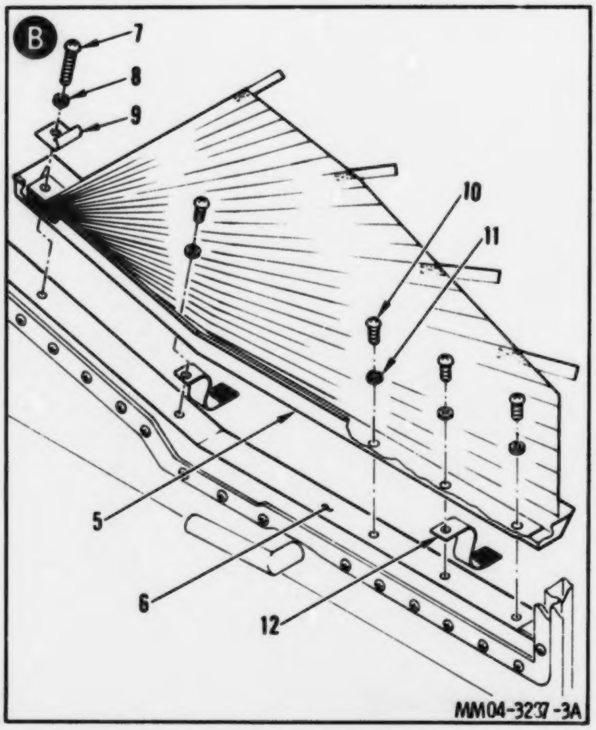
2-3-72. CPG GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION (cont) 2-3-72

A. REMOVAL

1. **Remove CPG left glareshield curtain/tray (1) from frame (2).**
   a. Remove four screws (3) and four washers (4) from frame (2).
   b. Remove tray (1) from frame (2).



2. **Remove CPG right glareshield curtain/tray (5) from frame (6).**
   a. Remove screw (7), washer (8), and spring clip (9) from tray (5).
   b. Remove four screws (10) and four washers (11) from tray (5) and frame (6).
   c. Remove tray (5) from frame (6).
   d. Remove two straps (12) from frame (6).



GO TO NEXT PAGE

B. CLEANING

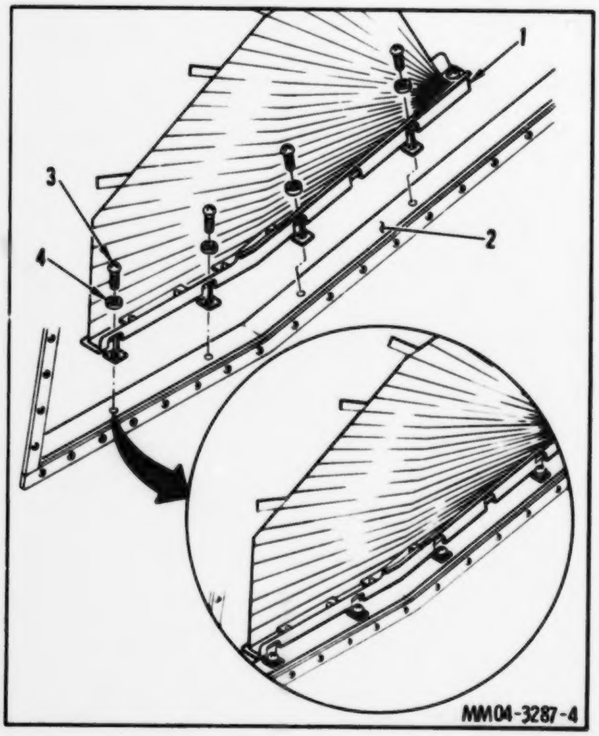
Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. **Inspect curtain/tray for cracks and tears.**
   a. Tears in curtain up to 1/2 inch are allowed. If tear exceeds 1/2 inch replace curtain.
   b. Cracks in curtain tray up to 1/4 inch are allowed if not in a location that could cause hand injury.
2. **Check straps for cracks. Small cracks are allowed if they do not affect deployment of the curtain.**

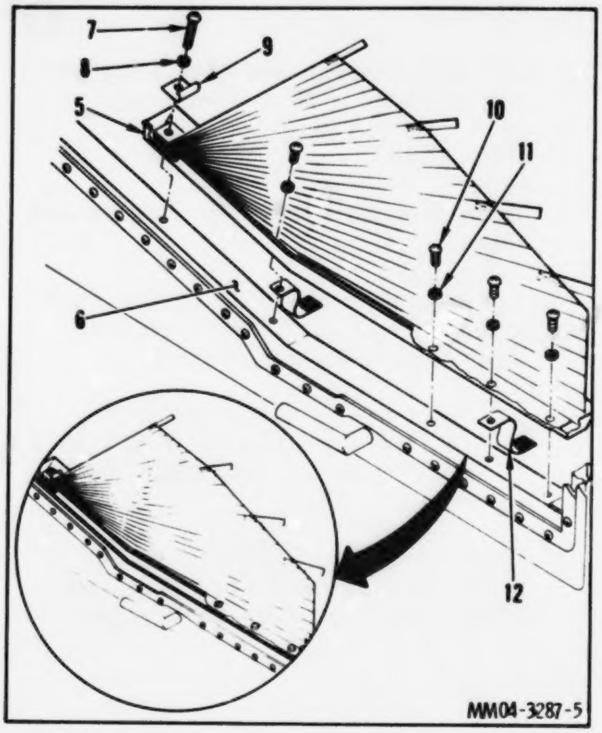
D. INSTALLATION

1. **Install CPG left glareshield curtain/tray (1) on frame (2).**
   a. Position tray (1) on frame (2).
   b. Install four screws (3) through four washers (4) into tray (1) and frame (2).



GO TO NEXT PAGE

2-3-72. CPG GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION (cont) 2-3-72



2. **Install CPG right glareshield curtain/tray (5) on frame (6).**

   a. Position straps (12) on frame (6).

   b. Position tray (5) on frame (6).

   c. Install four screws (10) through four washers (11), tray (5), and straps (12) into frame (6).

   d. Install screw (7) through washer (8), spring clip (9), and tray (5) into frame (6).

3. **Inspect (TI).**

END OF TASK

2-3-73. PILOT GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION 2-3-73

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Equipment Conditions:

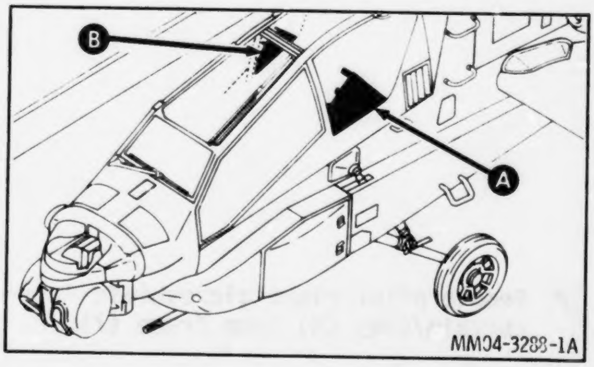
Ref	Condition
1-7-2	Helicopter safed

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

NOTE

This task is typical for left or right side except where noted.

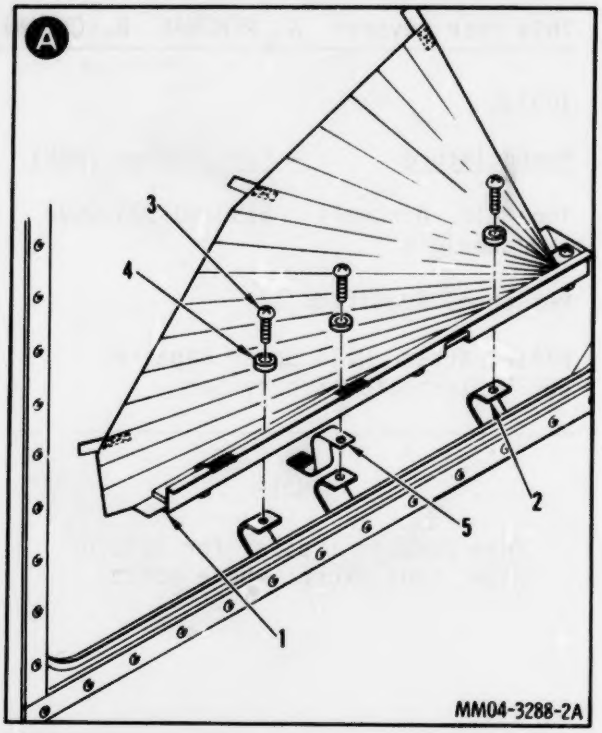


GO TO NEXT PAGE

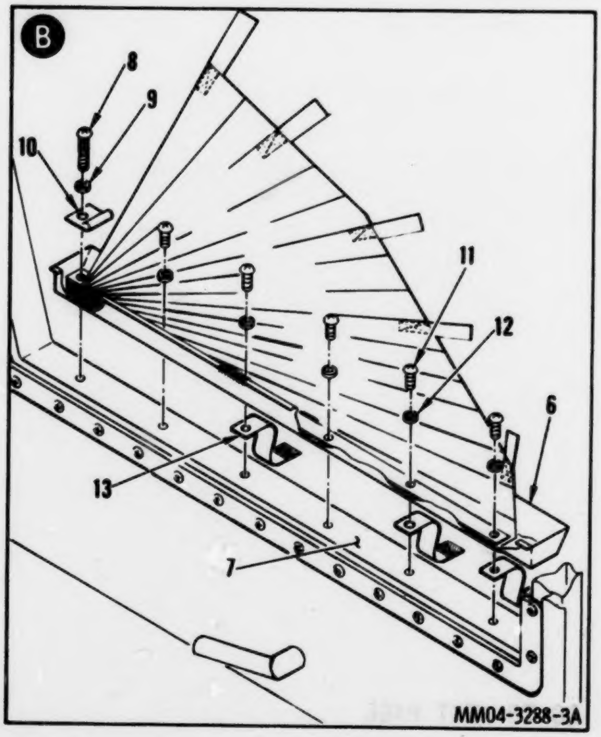
2-3-73. PILOT GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION (cont) 2-3-73

A. REMOVAL

1. **Remove pilot left glareshield curtain/tray (1) from clips (2).**
   - a. Remove three screws (3) and washers (4) from tray (1) and clips (2).
   - b. Remove tray (1) from clip (2).
   - c. Remove strap (5) from clip (2).



2. **Remove pilot right glareshield curtain/tray (6) from frame (7).**
   - a. Remove screw (8), washer (9), and spring clip (10) from tray (6) and frame (7).
   - b. Remove five screws (11), and washers (12) from tray (6) and frame (7).
   - c. Remove tray (6) from frame (7).
   - d. Remove three straps (13) from frame (7).



GO TO NEXT PAGE

B. CLEANING

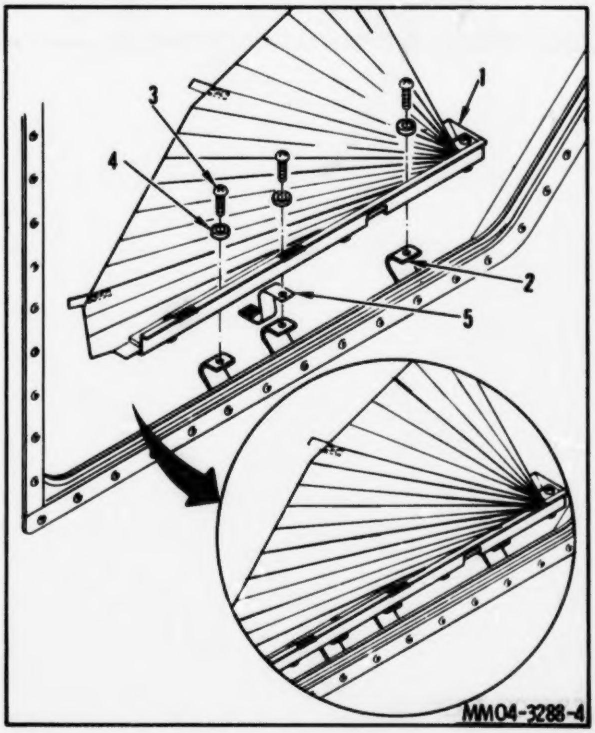
Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. Inspect curtain/tray for cracks and tears.
   a. Tears in curtain up to 1/2 inch are allowed. If tear exceeds 1/2 inch replace curtain.
   b. Cracks in curtain tray up to 1/4 inch are allowed if not in a location that could cause hand injury.
2. Check straps for cracks. Small cracks are allowed if they do not affect deployment of the curtain.

D. INSTALLATION

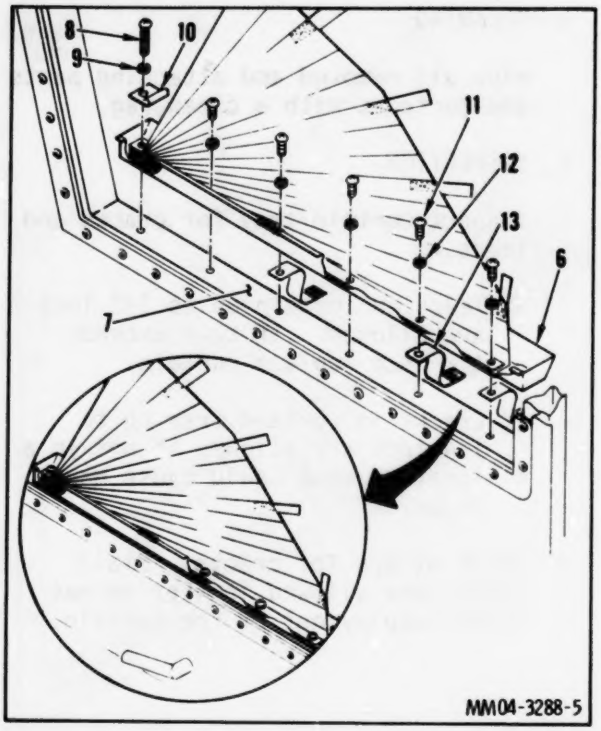
1. Install pilot left glareshield curtain/tray (1) on clips (2).
   a. Position strap (5) on center clip (2).
   b. Position tray (1) on clips (2).
   c. Install three screws (3) through washers (4), tray (1), and strap (5) into clips (2).



GO TO NEXT PAGE

2-3-73. PILOT GLARESHIELD CURTAIN/TRAY REMOVAL/INSTALLATION (cont) 2-3-73

2. **Install pilot right glareshield curtain/tray (6) on frame (7).**
   a. Position three straps (13) on frame (7).
   b. Position tray (6) on frame (7).
   c. Install five screws (11) through five washers (12, tray (6), and three straps (13) into frame (7).
   d. Install screw (8) through washer (9), spring clip (10), and tray (6) into frame (7).
3. **Inspect (TI).**



MM04-3288-5

END OF TASK

2-3-74. CPG GLARESHIELD EXTENSION REMOVAL/INSTALLATION 2-3-74

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

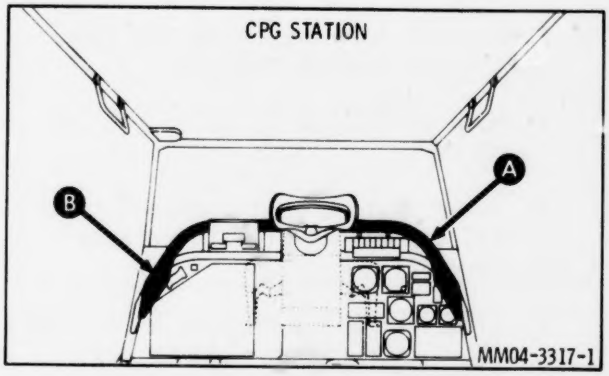
(E5) Grease

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



GO TO NEXT PAGE

2-3-74. CPG GLARESHIELD EXTENSION REMOVAL/INSTALLATION (cont) 2-3-74

A. REMOVAL

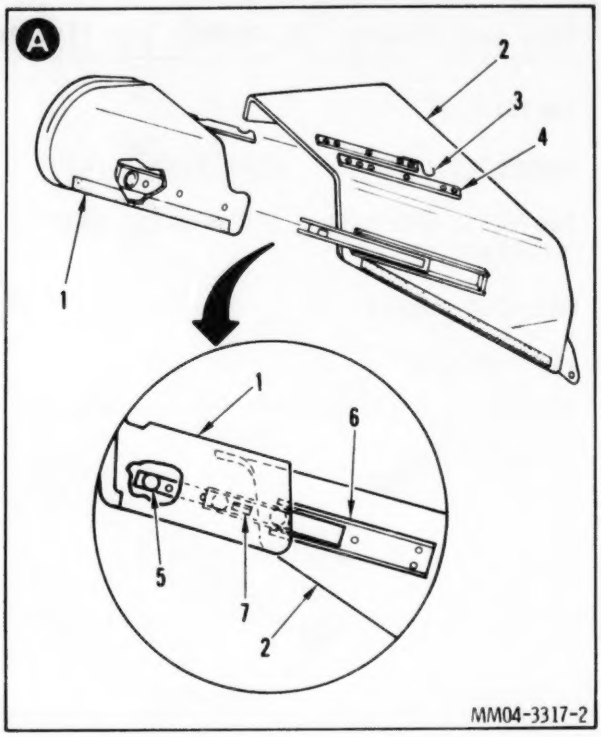
1. **Remove CPG right extension (1) from right fixed glareshield (2).**
   a. Hold spring (3) on guide (4) out of way.
   b. Insert 6-inch scale between track (5) and channel (6) to release lock (7).
   c. Slide track (5) on right extension (1) out of channel (6) on right fixed glareshield (2).
2. **Remove CPG left extension (8) from left fixed glareshield (9).**
   a. Hold spring (3) on guide (4) out of way.
   b. Insert 6-inch scale between track (5) and channel (6) to release lock (7).
   c. Slide track (5) on left extension (8) out of channel (6) on left fixed glareshield (9).

B. CLEANING

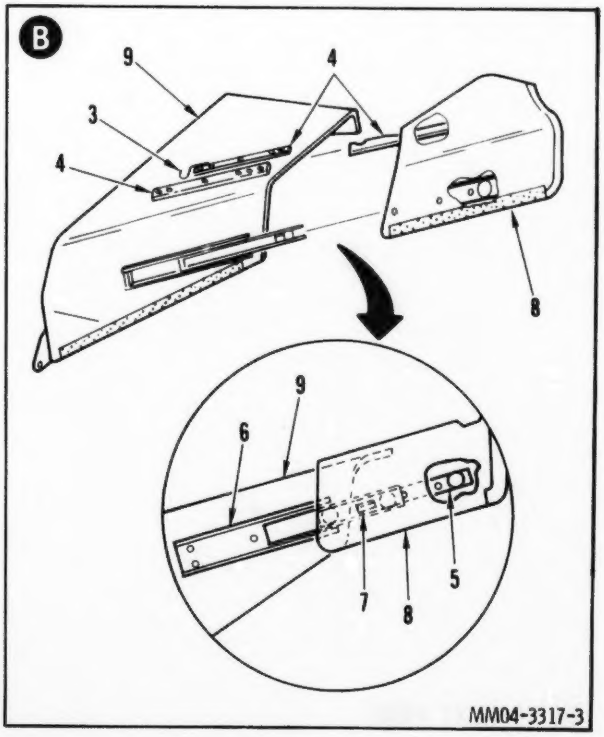
Wipe all removed parts with a clean rag.

C. INSPECTION

1. **Check extensions for cracks.** None allowed.
2. **Check channel and track for freedom of movement.**
3. **Check four guides on glareshields, and two guides on extensions for cracks.** None allowed.

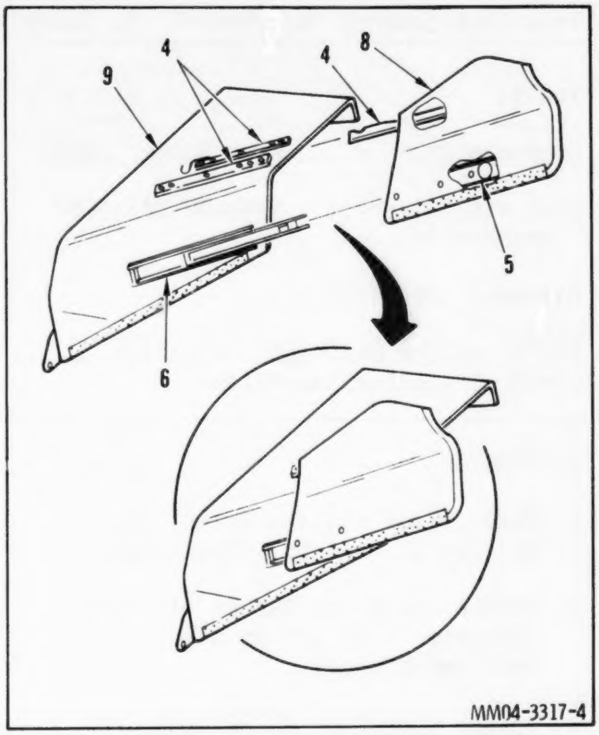


MM04-3317-2



MM04-3317-3

D. INSTALLATION



MM04-3317-4

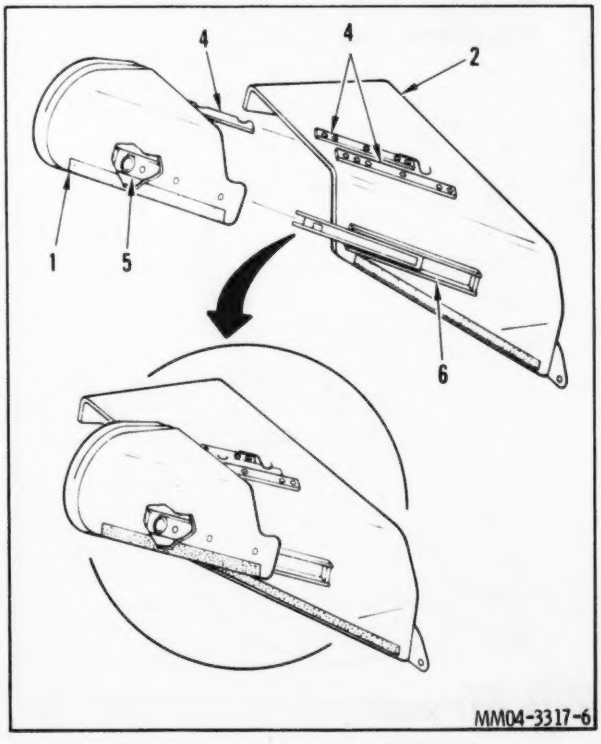
1. **Lubricate channel (6).** Use grease (E5).

2. **Install left extension (8) on left fixed glareshield (9).**

   a. Aline track (5) on extension (8) with channel (6) on glareshield (9).

   b. Aline guide (4) on extension (8) with two guides (4) on glareshield (9).

   c. Slide track (5) on extension (8) into channel (6) on glareshield (9).



MM04-3317-6

3. **Install right extension (1) on right fixed glareshield (2).**

   a. Aline track (5) on extension (1) with channel (6) on glareshield (2).

   b. Aline guide (4) on extension (1) with two guides (4) on glareshield (2).

   c. Slide track (5) on extension (1) into channel (6) on glareshield (2).

4. **Inspect (TI).**

END OF TASK

2-3-75. PILOT FIXED GLARESHIELD REMOVAL/INSTALLATION 2-3-75

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

References:

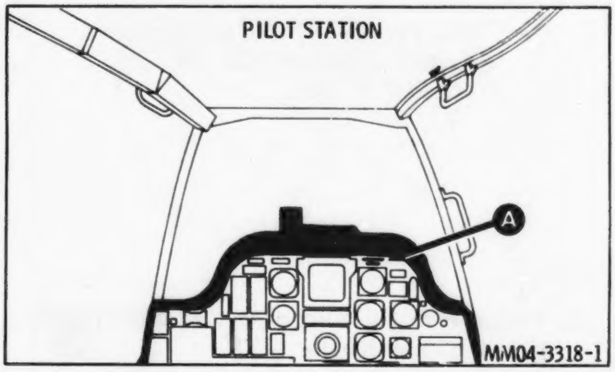
TM 55-1500-204-25/1

Equipment Conditions:

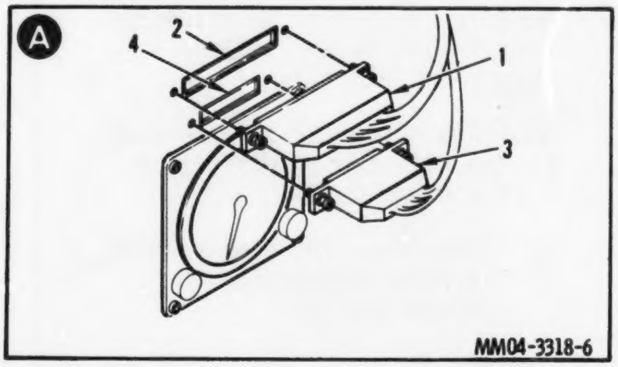
Ref	Condition
1-7-2	Helicopter safed
8-4-2	Pilots magnetic compass removed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.
2. Detach connector DS28P1 (1) from connector J164 (2) on pilot instrument panel.
3. Detach connector A325P1 (3) from connector J530 (4) on pilot instrument panel.



MM04-3318-1



MM04-3318-6

GO TO NEXT PAGE

4. **Remove pilot fixed glareshield (5).**

   a. Remove four bolts (6), four washers (7) and four nuts (8).

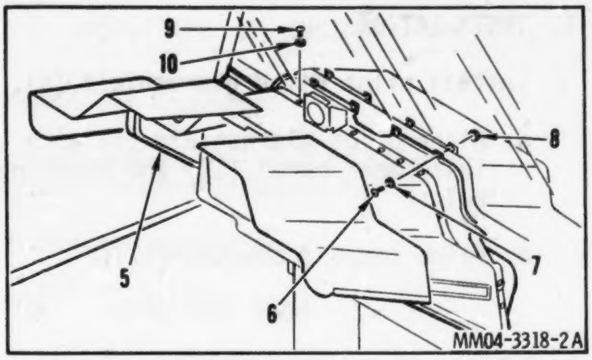
   b. Remove 16 screws (9) and 16 washers (10).

   c. Remove compass bracket (11).

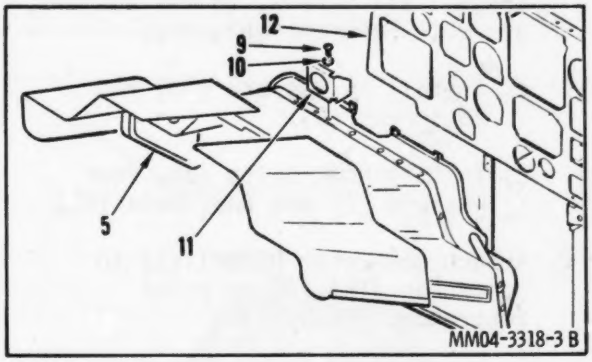
   d. Remove glareshield (5) from instrument panel (12).

5. **Remove pilot master caution panel (para 9-7-4).**

6. **Remove instrument floodlights (para 9-6-18).**



MM04-3318-2A



MM04-3318-3 B

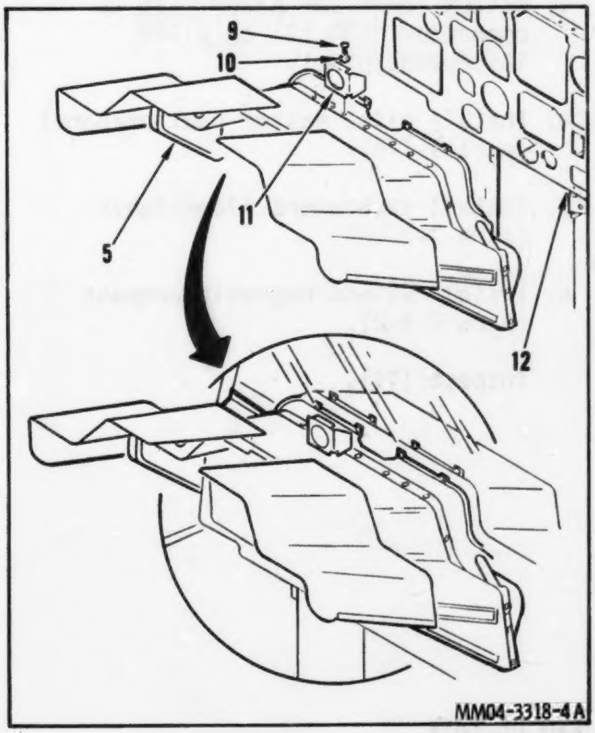
B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. **Check glareshield for cracks.** Cracks up to 1/2 inch are allowed. Cracks over 1/2 inch: replace glareshield.

2. **Check glareshield mounting holes for stripped threads** (TM 55-1500-204-25/1).



MM04-3318-4A

GO TO NEXT PAGE

2-3-75. PILOT FIXED GLARESHIELD REMOVAL/INSTALLATION (cont) 2-3-75

D. INSTALLATION

1. **Install pilot fixed glareshield (5).**

   a. Aline pilot glareshield (5) with instrument panel (12) and mounting holes.

   b. Aline compass bracket (11).

   NOTE

   Install all screws, bolts, washers, and nuts before tightening.

   c. Install 16 washers (10) and 16 screws (9).

   d. Install four bolts (6), four washers (7) and four nuts (8).

2. **Attach connector DS28P1 (1) to connector J164 (2) on pilot instrument panel.**

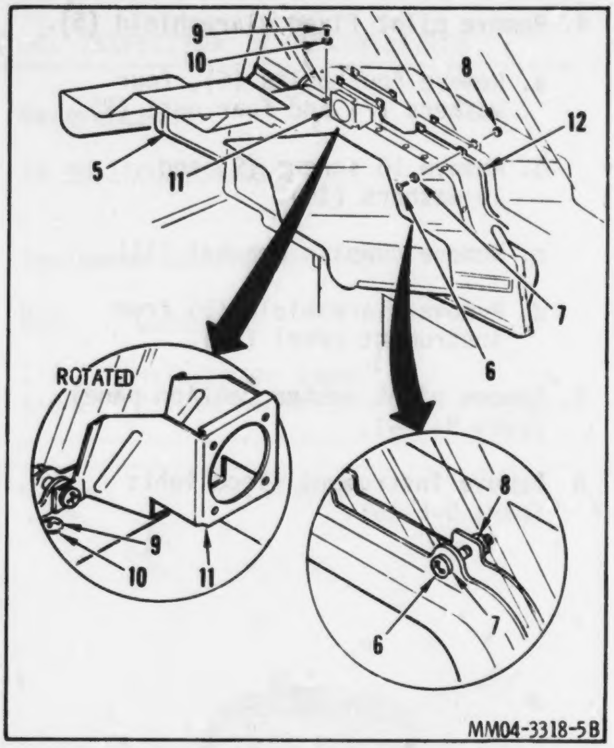
3. **Attach connector A325P1 (3) to connector J530 (4) on pilot instrument panel.**

4. **Install pilot master caution panel (para 9-7-4).**

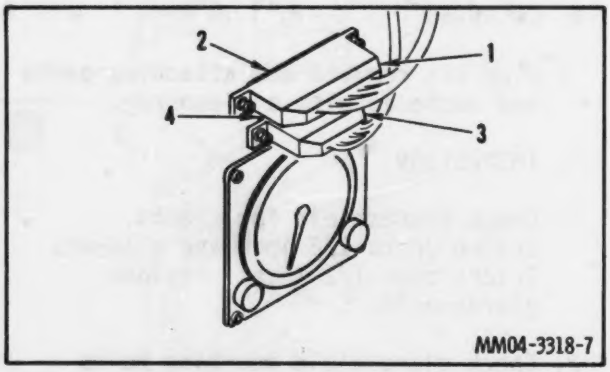
5. **Install instrument floodlights (para 9-6-18).**

6. **Install pilots magnetic compass (para 8-4-2).**

7. **Inspect (TI).**



MM04-3318-5B



MM04-3318-7

END OF TASK

2-3-76. PILOT GLARESHIELD EXTENSION REMOVAL/INSTALLATION 2-3-76

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

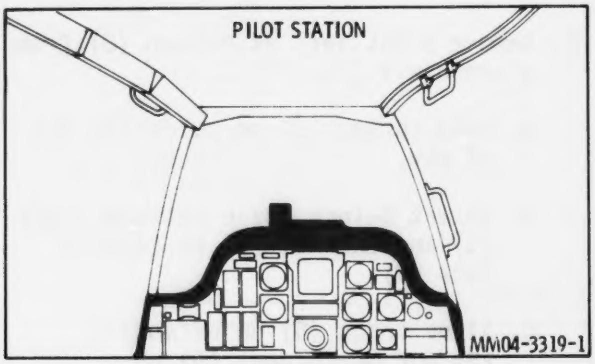
(E5) Grease

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



GO TO NEXT PAGE

2-3-76. PILOT GLARESHIELD EXTENSION REMOVAL/INSTALLATION (cont) 2-3-76

A. REMOVAL

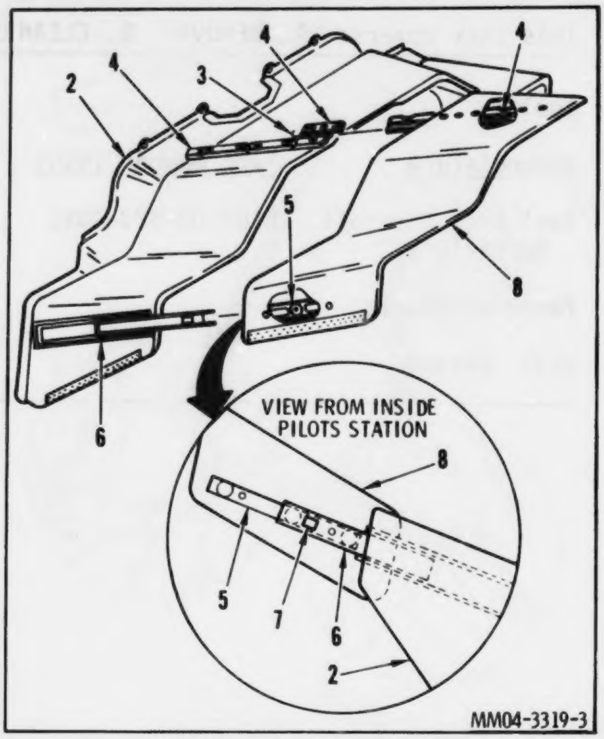
1. **Remove pilot right extension (1) from fixed glareshield (2).**
   - a. Hold spring (3) on guide (4) out of way.
   - b. Insert 6-inch scale between track (5) and channel (6) to release lock (7).
   - c. Slide track (5) on right extension (1) out of channel (6) on fixed glareshield (2).
2. **Remove pilot left extension (8) from glareshield (2).**
   - a. Hold spring (3) on guide (4) out of way.
   - b. Insert 6-inch scale between track (5) and channel (6) to release lock (7).
   - c. Slide track (5) on extension (8) out of channel (6) on glareshield (2).

B. CLEANING

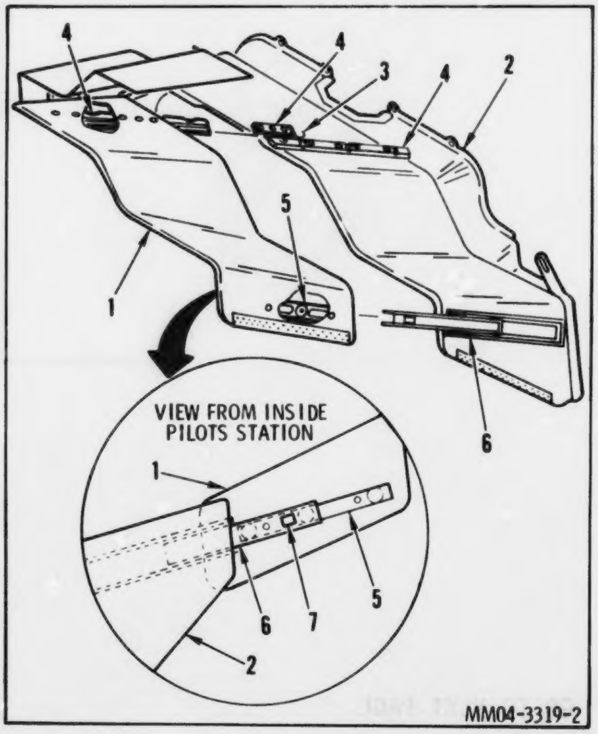
Wipe all removed parts with a clean rag.

C. INSPECTION

1. **Check extensions for cracks.** None allowed.
2. **Check channel and track for freedom of movement.**
3. **Check four guides on glareshield and two guides on extensions for cracks.** None allowed.



MM04-3319-3



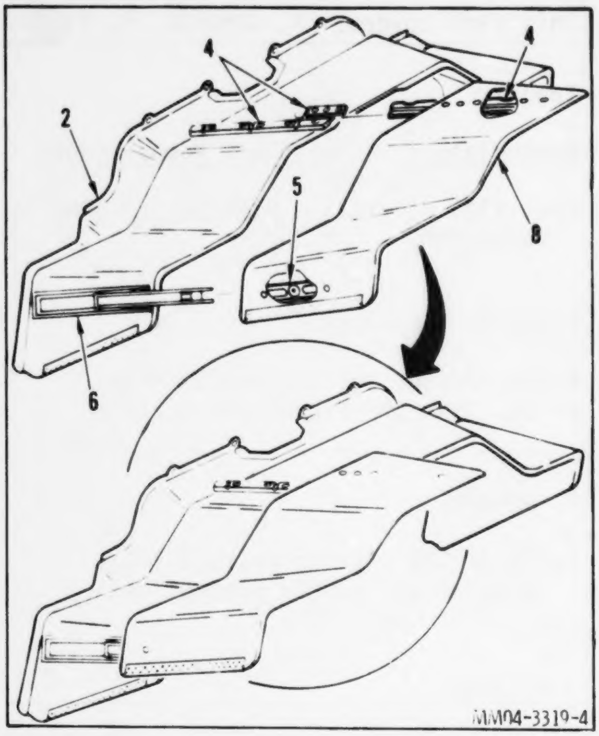
MM04-3319-2

GO TO NEXT PAGE

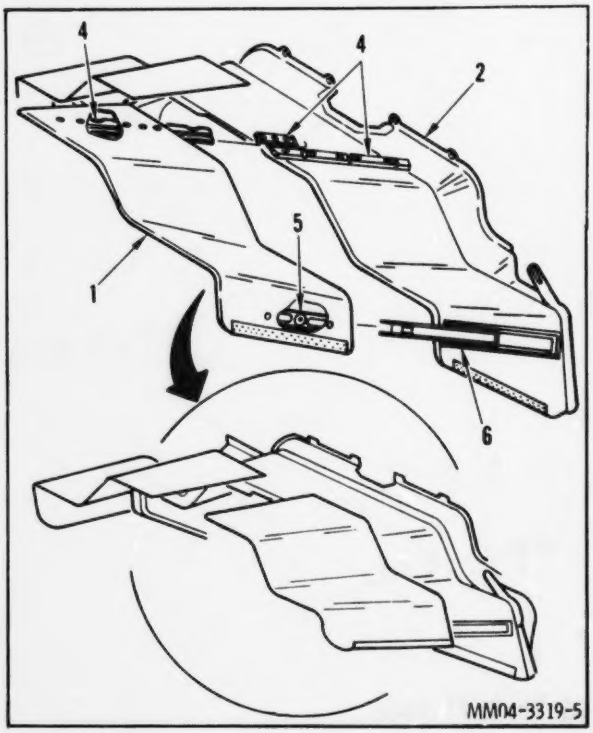
2-3-76. PILOT GLARESHIELD EXTENSION REMOVAL/INSTALLATION (cont) 2-3-76

D. INSTALLATION

1. **Lubricate channel (6).** Use grease (E5).
2. **Install left extension (8) on glareshield (2).**
   - a. Align track (5) on extension (8) with channel (6) on glareshield (2).
   - b. Aline guide (4) on extension (8) with two guides (4) on glareshield (2).
   - c. Slide extension (8) on glareshield (2).



3. **Install right extension (1) on glareshield (2).**
   - a. Aline track (5) on extension (1) with channel (6) on glareshield (2).
   - b. Aline guide (4) on extension (1) with two guides (4) on glareshield (2).
   - c. Slide extension (1) on glareshield (2).
4. **Inspect (TI).**



END OF TASK

2-3-77. SENSOR SURVEYING UNIT (SSU) MOUNT REMOVAL/INSTALLATION 2-3-77

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

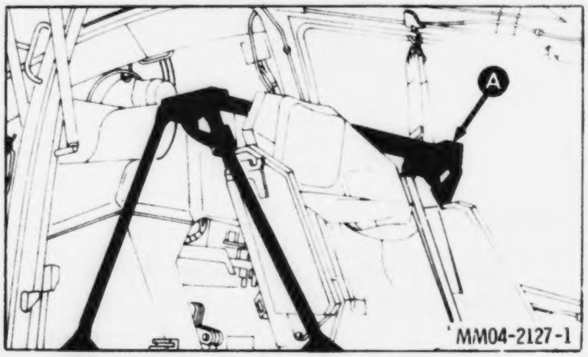
TM 9-1270-221-23

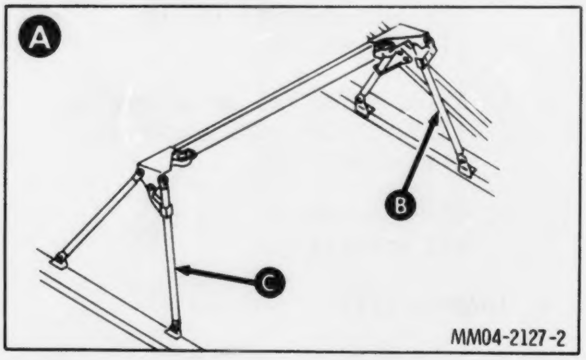
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
TM 9-1270-221-23P	Sensor surveying unit (SSU) removed

A. REMOVAL

1. Enter CPG station (para 1-7-1). Observe all safety precautions.





GO TO NEXT PAGE

2-3-77. SENSOR SURVEYING UNIT (SSU) MOUNT REMOVAL/INSTALLATION (cont) 2-3-77

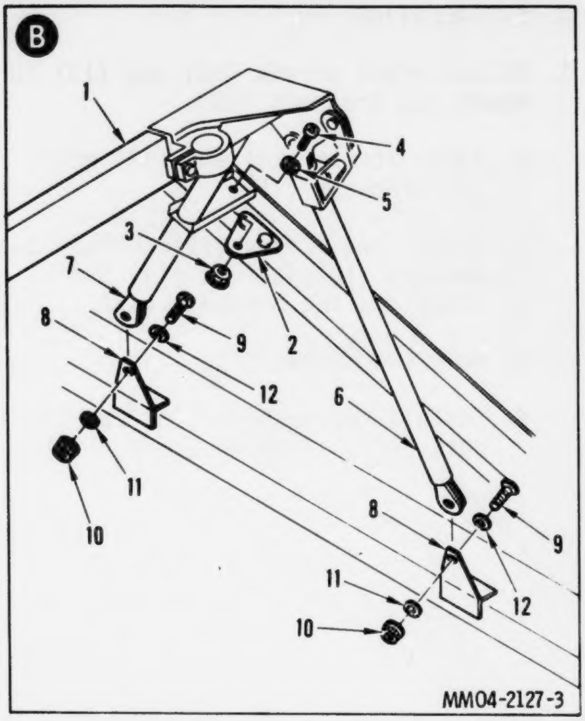
2. **Disconnect mount (1) from bracket (2).**
    - a. Hold nut (3).
    - b. Remove screw (4) and washer (5) from bracket (2).
3. **Remove left struts (6) and (7) from two brackets (8).**
    - a. Hold two screws (9).
    - b. Remove two nuts (10) and two washers (11).
    - c. Remove two screws (9) and two washers (12) from two brackets (8).
4. **Remove right struts (13) and (14) from two brackets (15).**
    - a. Hold two screws (16).
    - b. Remove two nuts (17) and two washers (18).
    - c. Remove two screws (16) and two washers (19) from two brackets (15).
5. **Remove SSU mount from CPG station.**

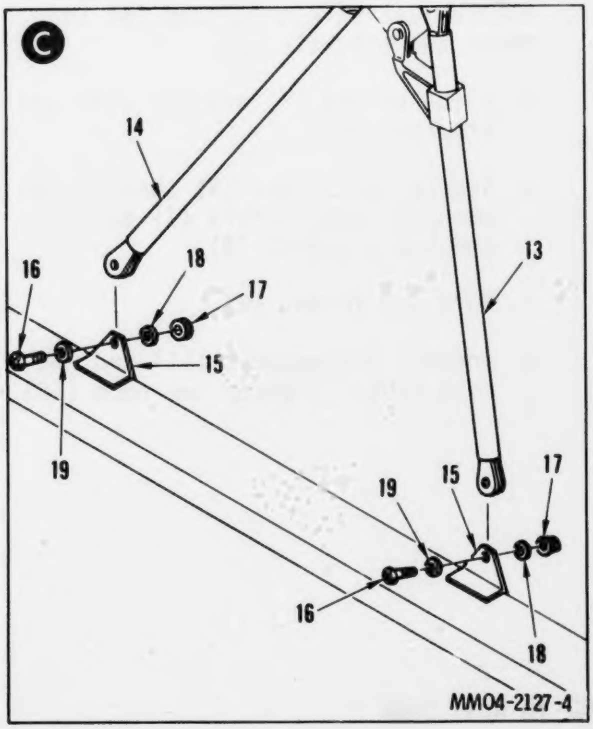
B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

Check struts and brackets for damage (para 2-3-1).





GO TO NEXT PAGE

D. INSTALLATION

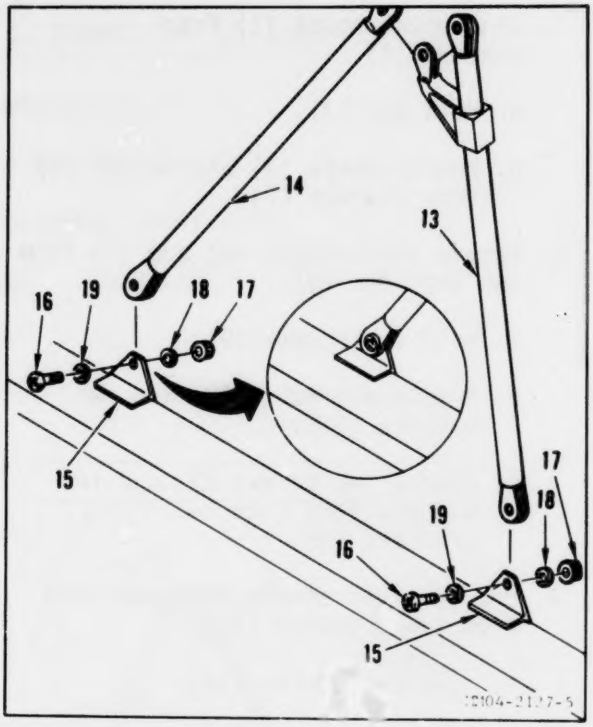
1. **Attach right struts (14) and (13) to mount two brackets (15).**

   a. Aline struts (14) and (13) with two brackets (15).

   b. Insert two screws (16) through two washers (19), struts (14) and (13), and two brackets (15).

   c. Hold two screws (16).

   d. Install two washers (18) and two nuts (17). Tighten two nuts (17).



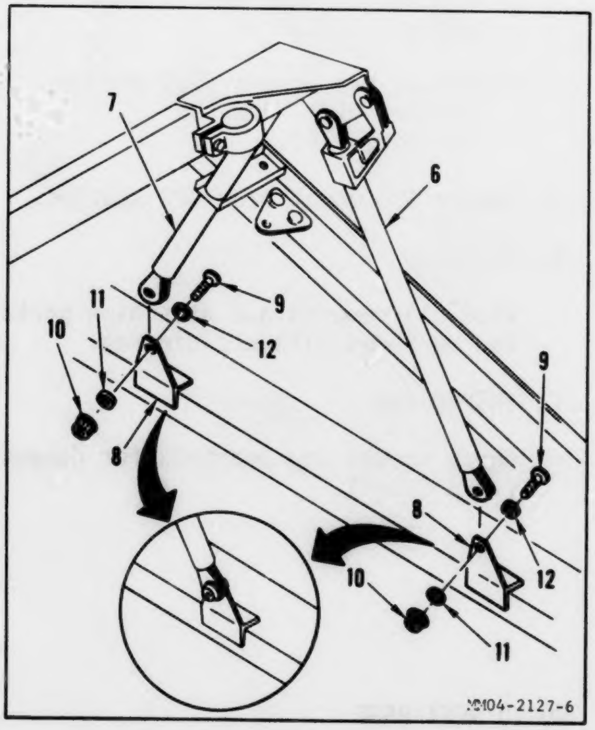
2. **Attach left struts (7) and (6) to mount two brackets (8).**

   a. Aline struts (7) and (6) with two brackets (8).

   b. Insert two screws (9) through two washers (12), struts (7) and (6), and two brackets (8).

   c. Hold two screws (9).

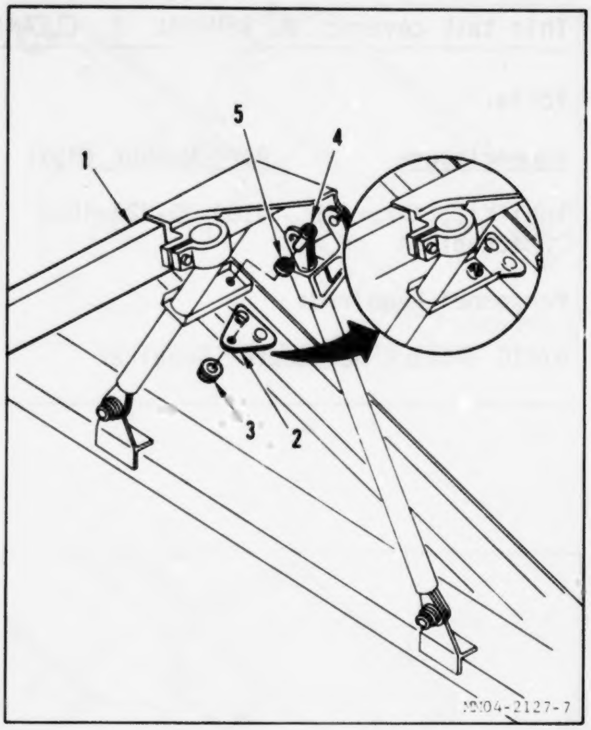
   d. Install two washers (11) and two nuts (10). Tighten two nuts (10).



GO TO NEXT PAGE

2-3-77. SENSOR SURVEYING UNIT (SSU) MOUNT REMOVAL/INSTALLATION (cont) 2-3-77

3. **Attach mount (1) to upper bracket (2).**
   a. Insert screw (4) through washer (5), strut, and bracket (2). Install nut (3).
   b. Hold screw (4).
   c. Tighten nut (3).
4. **Inspect (TI).**
5. **Install SSU** (TM 9-1270-221-23).
6. **Perform SSU operational check** (TM 9-1270-221-23).



END OF TASK

2-3-78. CPG MAP HOLDER REMOVAL/INSTALLATION 2-3-78

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

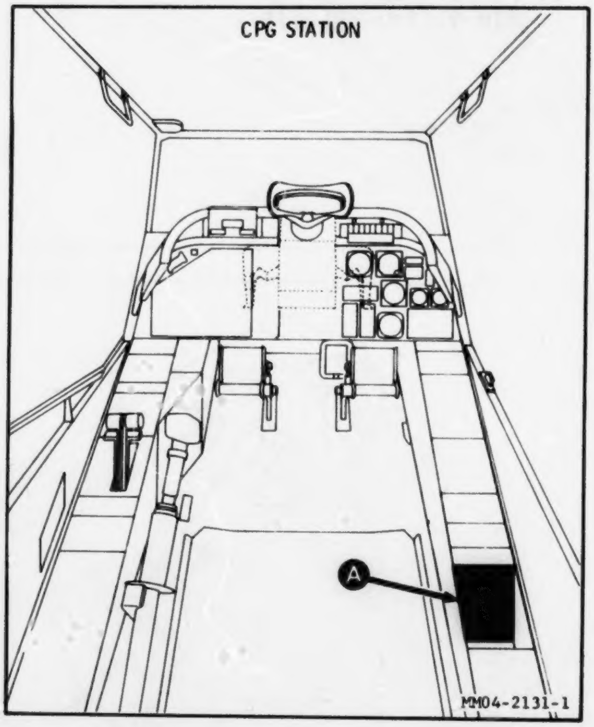
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer

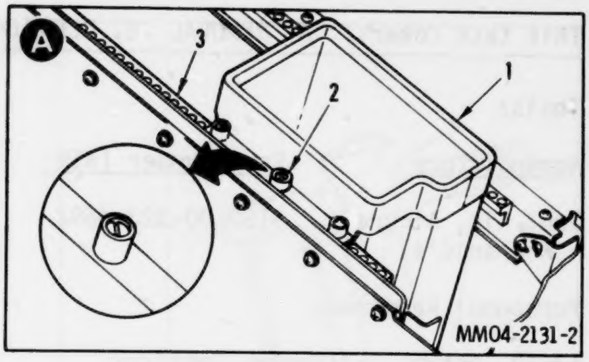
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



GO TO NEXT PAGE

2-3-78. CPG MAP HOLDER REMOVAL/INSTALLATION (cont) 2-3-78



A. REMOVAL

1. **Enter CPG station (para 1-7-1). Observe all safety precautions.**
2. **Remove map holder (1).**
   - a. Unlock six fasteners (2).
   - b. Lift map holder (1) from console (3).

B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

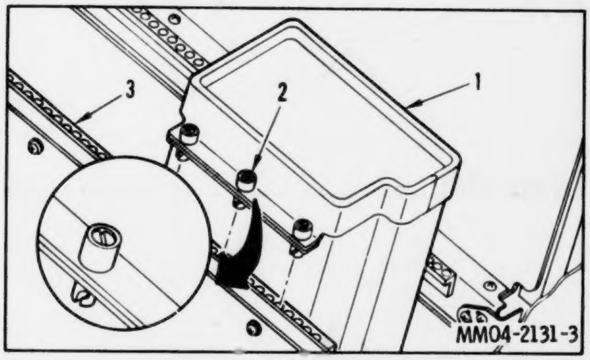
C. INSPECTION

Check map holder for cracks (para 2-3-2).

D. INSTALLATION

Install map holder (1).

- a. Position map holder (1) in console (3).
- b. Lock six fasteners (2).



END OF TASK

2-3-79. FIRE EXTINGUISHER MOUNTING BRACKET AND SUPPORT REMOVAL/INSTALLATION 2-3-79

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

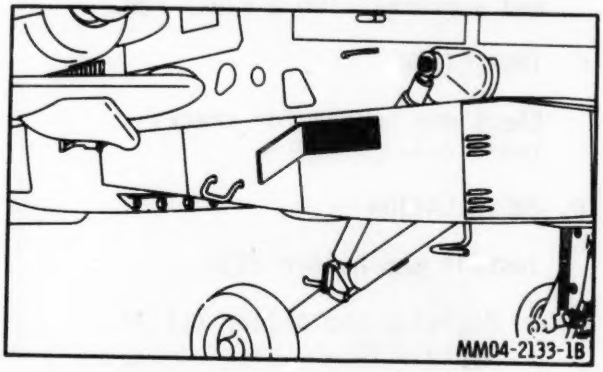
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access door R1554 opened



GO TO NEXT PAGE

2-3-79. FIRE EXTINGUISHER MOUNTING BRACKET AND SUPPORT REMOVAL/INSTALLATION (cont)

A. REMOVAL

Remove fire extinguisher mounting bracket (1) and bracket support (4). Remove four screws (2) and washers (3).

B. CLEANING

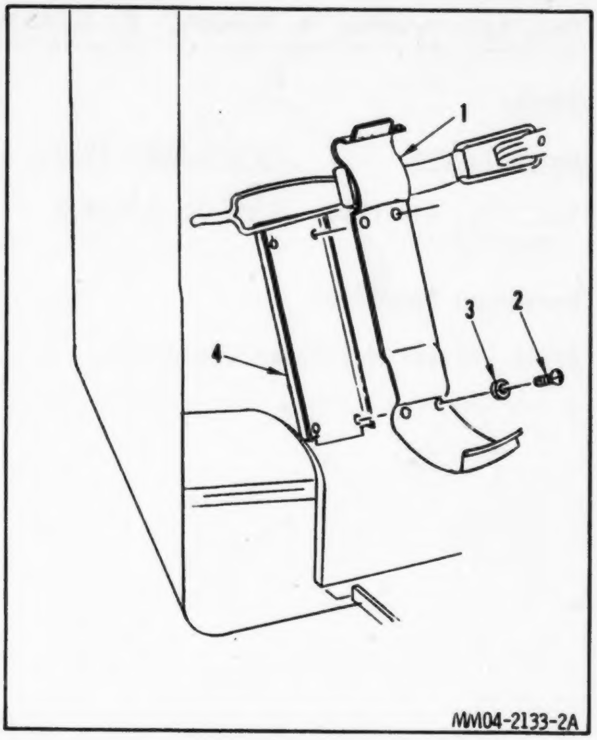
Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

Check mounting bracket and bracket support for damage (para 2-3-2).

D. INSTALLATION

1. **Install fire extinguisher bracket support (4) and mounting bracket (1).** Install four washers (3) and screws (2).
2. **Secure access door R155** (para 2-2-2).



END OF TASK

2-3-80. CPG REAR VIEW MIRROR REMOVAL/INSTALLATION 2-3-80

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

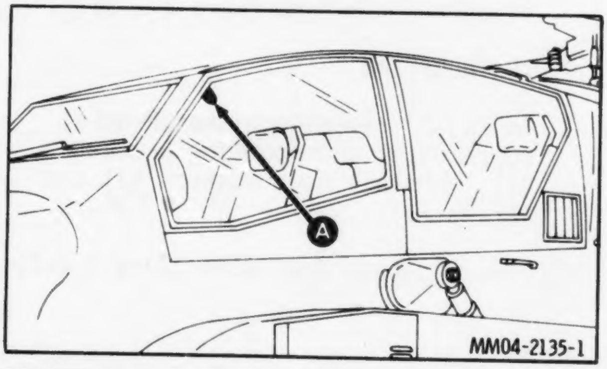
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

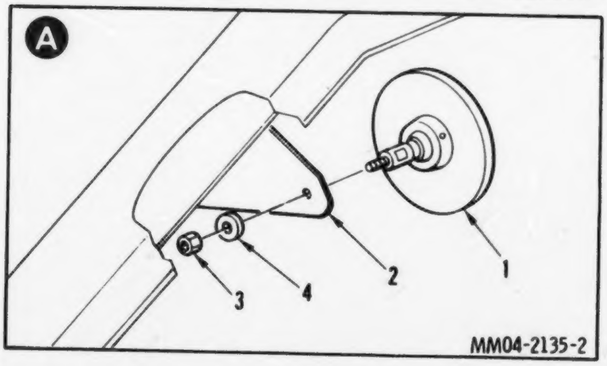
67R10 Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



MM04-2135-1



MM04-2135-2

A. REMOVAL

1. **Remove CPG rear view mirror (1) from mount (2).**

   a. Hold bolt of mirror (1).

   b. Remove nut (3) and washer (4).

   c. Remove mirror (1).

B. **CLEANING**

Wipe all removed and attaching parts and surfaces with a clean rag.

C. **INSPECTION**

1. **Check mount for cracks.**

2. **Check mirror for damage or stripped threads.**

GO TO NEXT PAGE

2-3-80. CPG REAR VIEW MIRROR REMOVAL/INSTALLATION (cont) 2-3-80

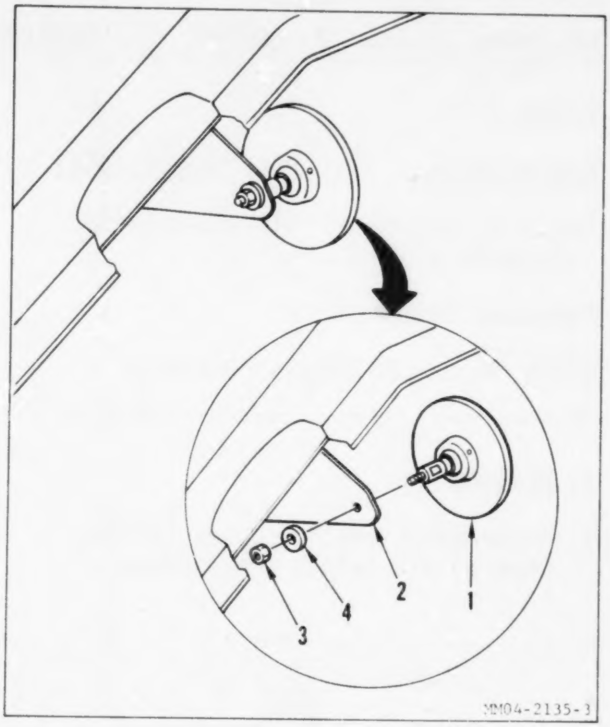
D. INSTALLATION

Install mirror (1) on mount (2).

a. Position bolt of mirror (1) into hole on mount (2).

b. Hold bolt on mirror (1).

c. Install washer (4) and nut (3).



END OF TASK

2-3-81. PILOT/CPG FOOT GUARD REMOVAL/INSTALLATION 2-3-81

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer

References:

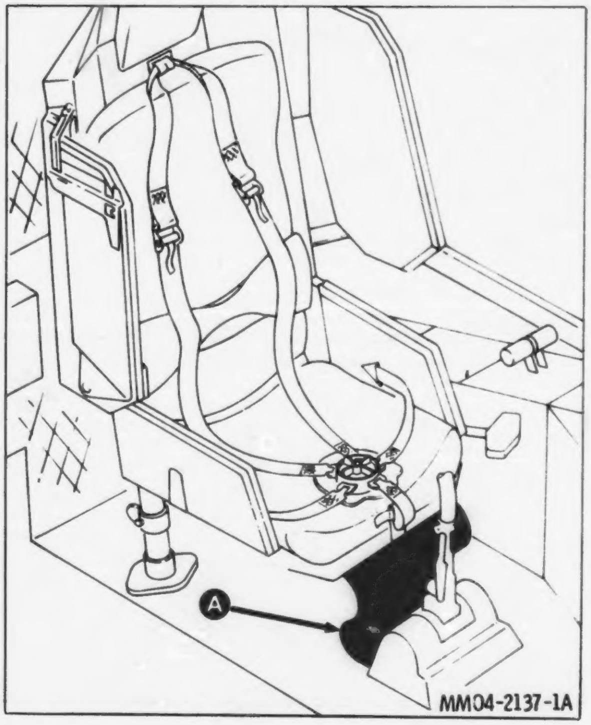
TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

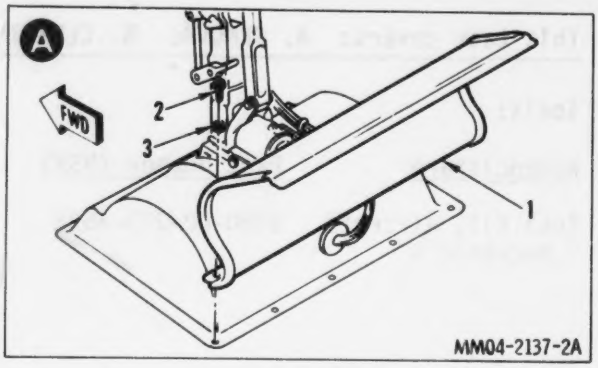
1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**



GO TO NEXT PAGE

2-3-81. PILOT/CPG FOOT GUARD REMOVAL/INSTALLATION (cont) 2-3-81

2. **Remove pilot/CPG floor guard (1).** Remove six screws (2) and six washers (3).



B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. **Check for missing screws or stripped threads** (TM 55-1500-204-25/1).

2. **Check pilot/CPG foot guard for cracks** (para 2-3-2).

NOTE

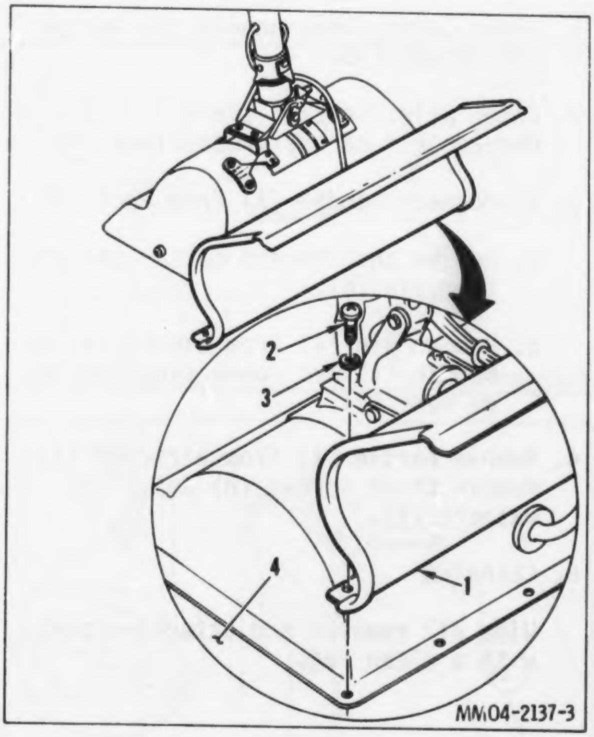
CPG foot guard is installed under cyclic stick cover.

D. INSTALLATION

Install pilot/CPG foot guard (1).

a. Position foot guard (1) and aline screw holes.

b. Install six screws (2) through six washers (3) and foot guard (1) into cyclic stick cover.



END OF TASK

2-3-82. CANOPY VENT HANDLE REMOVAL/INSTALLATION 2-3-82

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

Cotter Pin

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

References:

TM 55-1500-204-25/1

Equipment Conditions:

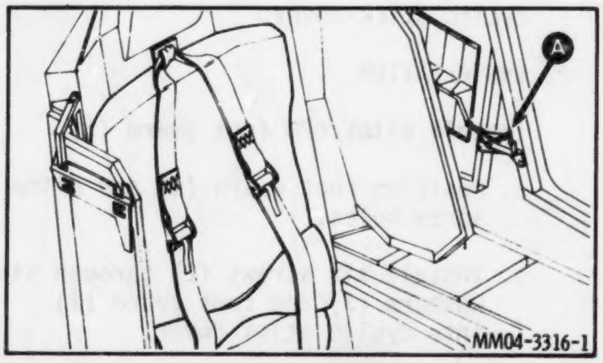
Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

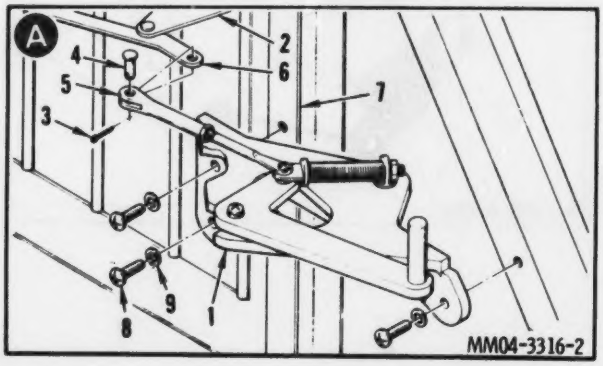
1. Place canopy vent handle (1) in the closed position.
2. Enter pilot station (para 1-7-1). Observe all safety precautions.
3. Disconnect handle (1) from vent (2).
   a. Remove and discard cotter pin (3) from pin (4).
   b. Remove pin (4) from clevis (5) on handle (1) and connecting rod (6) on vent (2).
4. Remove handle (1) from airframe (7). Remove three screws (8) and three washers (9).

B. CLEANING

Wipe all removed and attaching parts with a clean rag.



MM04-3316-1



MM04-3316-2

GO TO NEXT PAGE

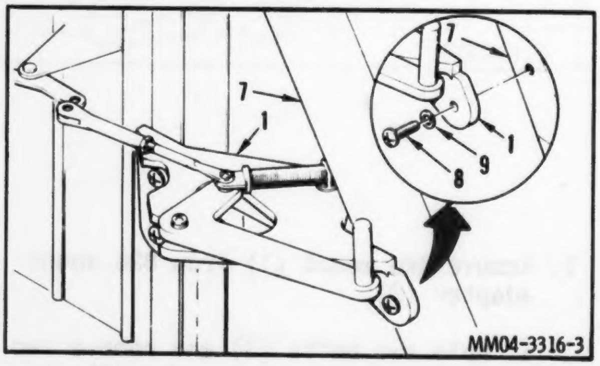
2-3-82. CANOPY VENT HANDLE REMOVAL/INSTALLATION (cont) 2-3-82

C. INSPECTION

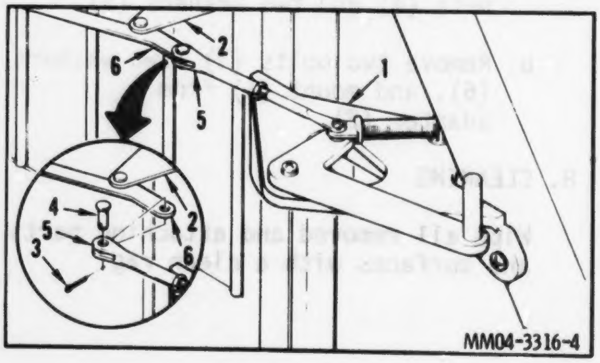
1. **Check airframe for the following:**
   - a. Cracks and bends (para 2-3-1).
   - b. Stripped or damaged nut plates (TM 55-1500-204-25/1).
   - c. Corrosion (para 1-5-38).
2. **Check handle for the following:**
   - a. Cracks, warps, dents, and gouges (para 2-3-1).
   - b. Broken spring. Not allowed.
   - c. Loose or missing hardware.
   - d. Corrosion (para 1-5-38).

D. INSTALLATION

1. **Install handle (1) on airframe (7).**
   - a. Aline mounting holes on vent handle (1) with mounting holes on airframe (7).
   - b. Install three washers (9) and three screws (8).
2. **Adjust clevis (5) on handle (1).** With vent (2) closed, adjust clevis (5) to aline mounting holes in clevis (5) and connecting rod (6).
3. **Install pin (4) through mounting hole in terminal (5) and connecting rod (6).** Install new cotter pin (3).
4. **Inspect (TI).**



MM04-3316-3



MM04-3316-4

END OF TASK

2-3-83. PILOT BORESIGHT RETICLE UNIT (BRU) MOUNT REMOVAL/INSTALLATION 2-3-83

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

References:

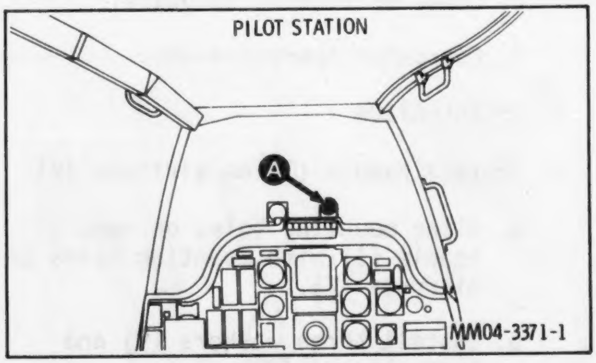
TM 9-1270-221-23
TM 9-1230-476-20-1

Equipment Conditions:

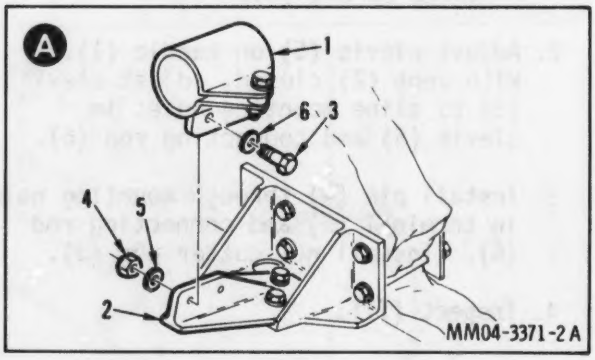
Ref	Condition
1-7-2	Helicopter safed
TM 9-1270-221-23	Pilot boresight reticle unit removed

A. REMOVAL

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**



2. **Remove BRU mount (1) from BRU mount adapter (2).**
   a. Hold two bolts (3) and remove two nuts (4) and two washers (5).
   b. Remove two bolts (3), two washers (6), and mount (1) from adapter (2).



B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

GO TO NEXT PAGE

2-3-83. PILOT BORESIGHT RETICLE UNIT (BRU) MOUNT REMOVAL/INSTALLATION (cont) 2-3-83

C. **INSPECTION**

1. **Check BRU mount (1) and adapter (2) for:**

   a. Cracks. None allowed.

   b. Corrosion (para 1-5-38).

2. **Check for stripped bolts and nuts.**

D. **INSTALLATION**

1. **Install BRU mount (1) on adapter (2).**

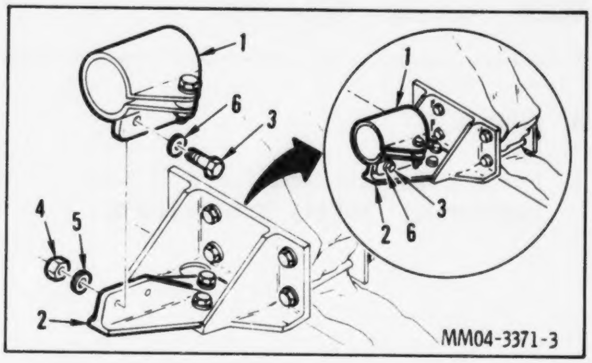
   a. Aline mount (1) with adapter (2).

   b. Insert two bolts (3) through two washers (6) in mount (1) and adapter (2).

   c. Hold two bolts (3). Install two washers (5) and two nuts (4).

2. **Inspect (TI).**

3. **Install BRU (TM 9-1270-221-23).**



END OF TASK

2-3-84. PILOT BORESIGHT MOUNT ADAPTER REMOVAL/INSTALLATION 2-3-84

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Equipment Conditions:

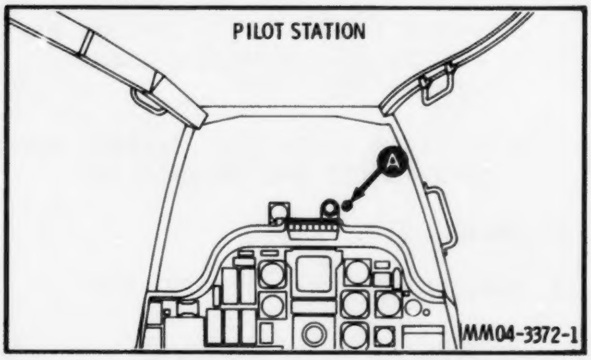
Ref	Condition
1-7-2	Helicopter safed
2-3-83	Pilot boresight mount removed

Personnel Required:

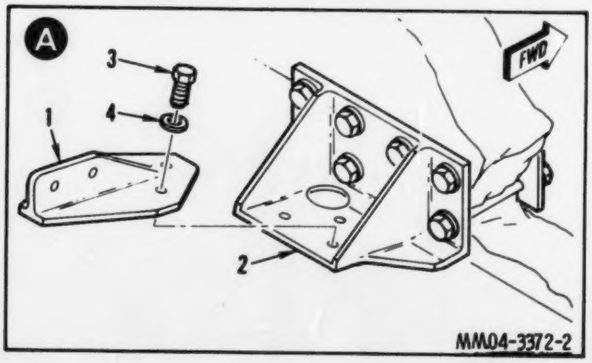
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.



2. Remove pilot boresight mount adapter (1) from support (2). Remove three bolts (3) and three washers (4).



B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

Check pilot boresight mount adapter and support for:

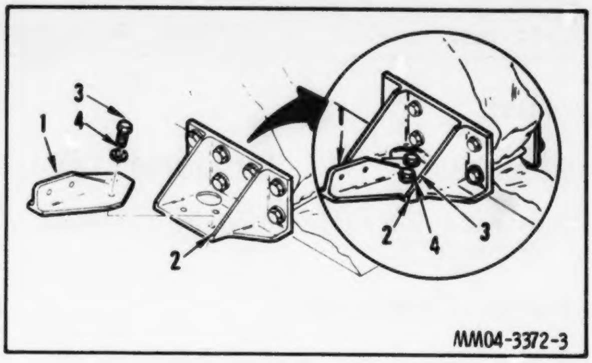
a. Cracks. None allowed.

b. Corrosion (para 1-5-38).

GO TO NEXT PAGE

2-3-84. PILOT BORESIGHT MOUNT ADAPTER REMOVAL/INSTALLATION (cont) 2-3-84

D. INSTALLATION



1. **Install pilot boresight mount adapter (1) on support (2).**

   a. Aline adapter (1) with support (2).

   b. Install three bolts (3) through three washers (4), and adapter (1) into support (2).

2. **Inspect (TI).**

END OF TASK

2-3-85. PILOT BORESIGHT MOUNT SUPPORT REMOVAL/INSTALLATION 2-3-85

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

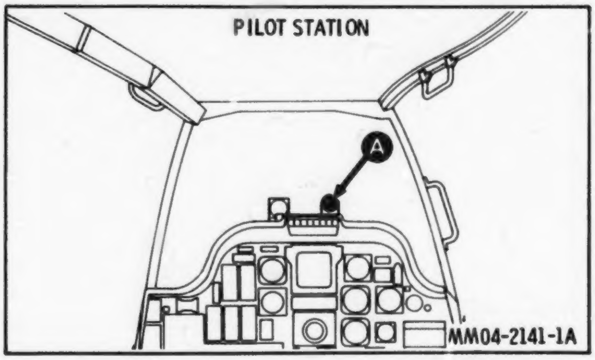
67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

Equipment Conditions:

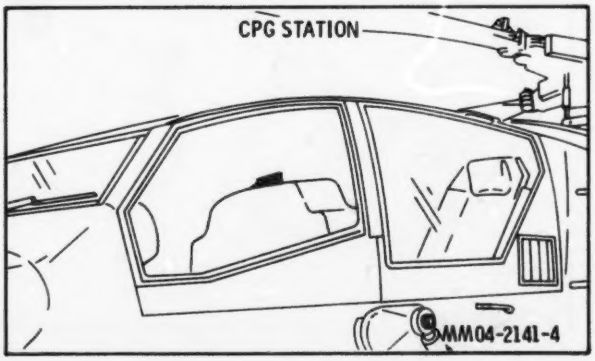
Ref	Condition
1-7-2	Helicopter safed
2-3-84	Aft boresight mount adapter removed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.



2. Assistant enter CPG station (para 1-7-1). Observe all safety precautions.



GO TO NEXT PAGE

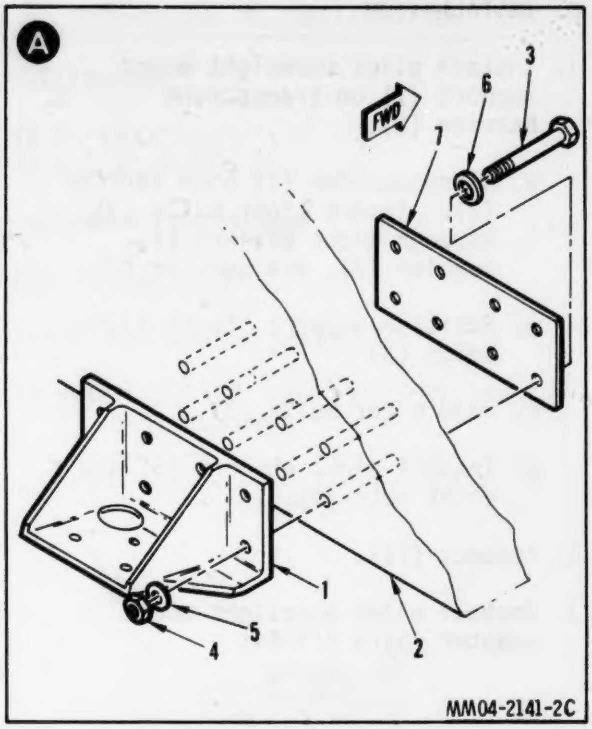
3. **Remove pilot boresight mount support (1) from transparent barrier (2).**

   a. Hold eight bolts (3).

   b. Remove eight nuts (4) and washers (5).

   c. Remove support (1) from barrier (2).

   d. Remove eight bolts (3), washers (6), and doubler (7) from barrier (2).



B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. **Check transparent barrier for cracks or glazing.** None allowed.

2. **Check pilot boresight mount support and doubler for the following:**

   a. Cracks. None allowed.

   b. Corrosion (para 1-5-38).

3. **Check for stripped bolts and nuts.**

GO TO NEXT PAGE

2-3-85. PILOT BORESIGHT MOUNT SUPPORT REMOVAL/INSTALLATION (cont) 2-3-85

D. INSTALLATION

1. **Install pilot boresight mount support (1) on transparent barrier (2).**

   a. Aline doubler (7) with barrier (2). Insert eight bolts (3) through eight washers (6), doubler (7), and barrier (2).

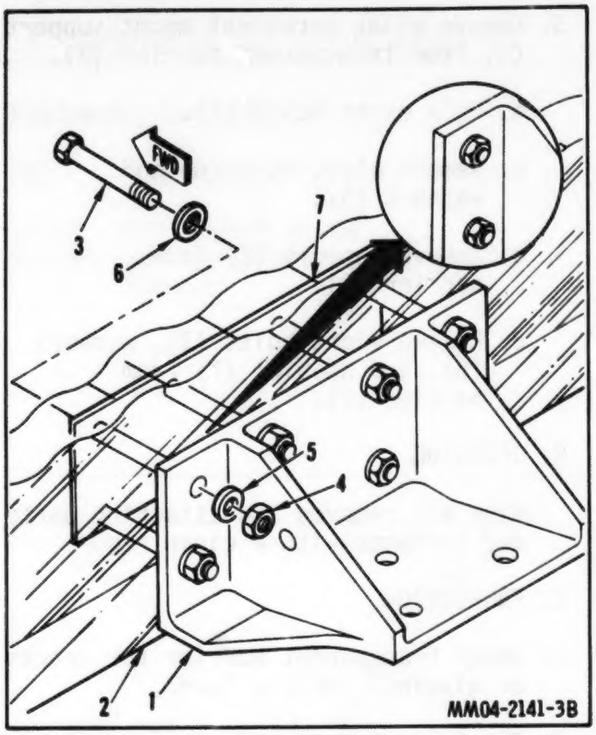
   b. Position support (1) on eight bolts (3).

   c. Hold eight bolts (3).

   d. Install eight washers (5) and eight nuts (4).

2. **Inspect (TI).**

3. **Install pilot boresight mount adapter** (para 2-3-84).



END OF TASK

2-3-86. CPG BORESIGHT MOUNT FITTING REMOVAL/INSTALLATION 2-3-86

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

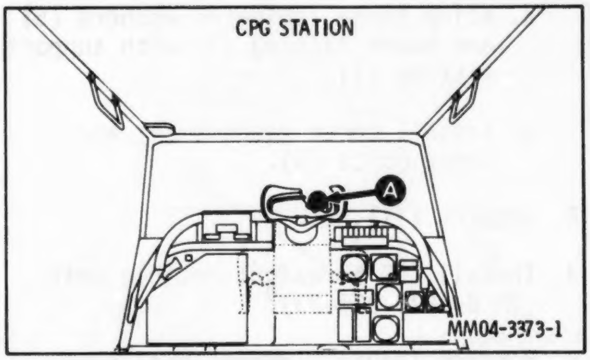
TM 9-1270-221-23
TM 9-1230-476-20-1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
TM 9-1270-221-23	CPG boresight reticle unit removed

A. REMOVAL

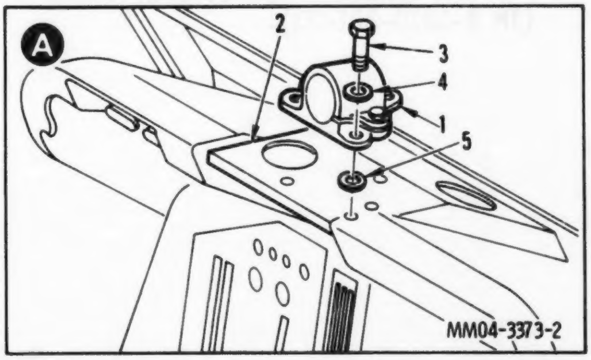
1. Enter CPG station (para 1-7-1). Observe all safety precautions.



2. Remove CPG boresight mount fitting (1) from CPG boresight support fitting (2).

a. Remove three bolts (3) and washers (4).

b. Remove mount fitting (1) and three laminated washers (5) from support fitting (2).



B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

GO TO NEXT PAGE

2-3-86. CPG BORESIGHT MOUNT FITTING REMOVAL/INSTALLATION (cont) 2-3-86

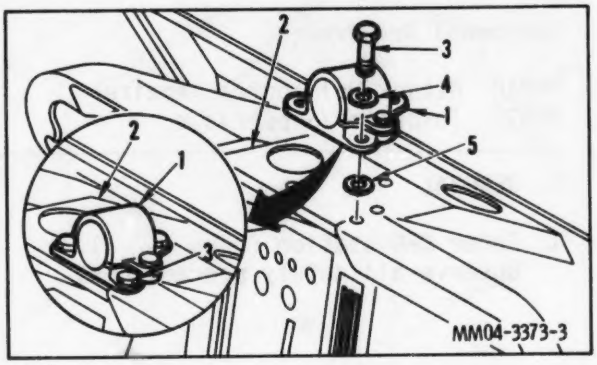
C. INSPECTION

Check CPG boresight mount fitting and CPG boresight support fitting for the following:

a. Cracks. None allowed.

b. Corrosion (para 1-5-38).

D. INSTALLATION



1. Install CPG boresight mount fitting (1) on CPG borsight support assembly fitting (2).

   a. Aline three laminated washers (5) and mount fitting (1) with support fitting (2).

   b. Install three washers (4) and three bolts (3).

2. Inspect (TI).

3. Install CPG boresight reticle unit (TM 9-1270-221-23).

4. Perform IHADSS - operational check (TM 9-1270-221-23).

END OF TASK

2-3-87. CPG LEFT OR RIGHT PROTECTIVE COVER REMOVAL/INSTALLATION 2-3-87

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

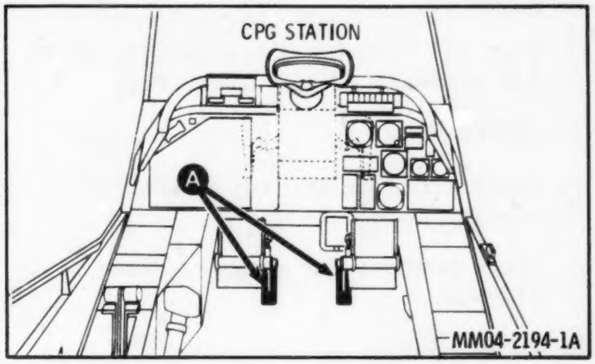
67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-89	Scuff plates removed
2-3-90	CPG floor armor removed

A. **REMOVAL**

1. **Enter CPG station (para 1-7-1). Observe all safety precautions.**



GO TO NEXT PAGE

2-3-87. CPG LEFT OR RIGHT PROTECTIVE COVER REMOVAL/INSTALLATION (cont) 2-3-87

NOTE

The task is typical for left or right covers.

2. Remove closures (1) and (2) and retainers (3) and (4).
   - a. Remove four screws (5) and washers (6).
   - b. Remove six screws (7) and washers (8).
   - c. Remove brushes (9) and (10) from retainers (3) and (4).

B. CLEANING

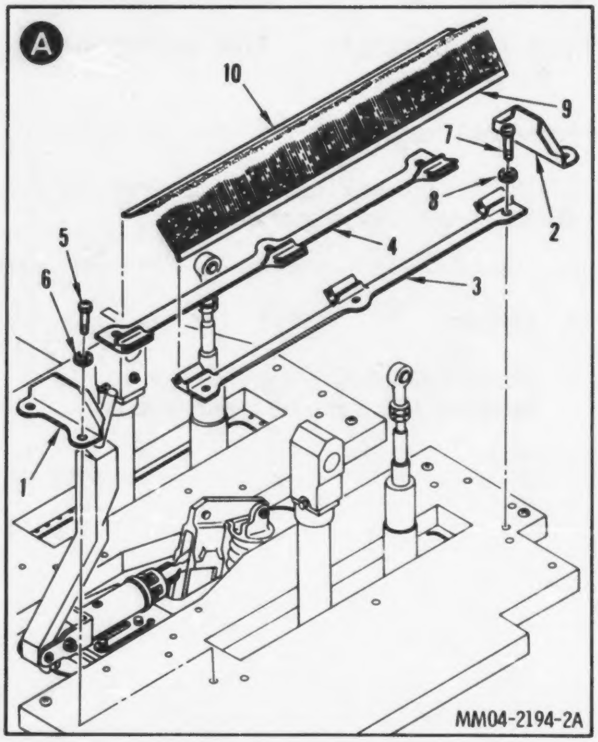
Wipe all removed and attaching parts and surfaces with a clean rag.

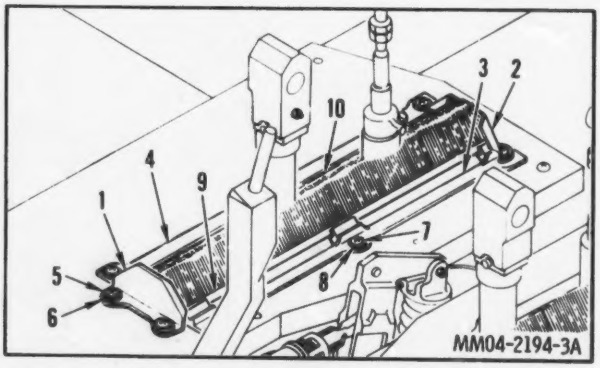
C. INSPECTION

1. Check closures and retainers for cracks (para 2-3-2).
2. Check brushes for damage. None allowed.

D. INSTALLATION

1. Install brushes in retainers.
2. Install retainers (4) and (3) and closures (1) and (2).
   - a. Install six washers (8) and screws (7).
   - b. Install four washers (6) and screws (5).
3. Install CPG floor armor (para 2-7-90).
4. Install scuff plates (para 2-3-89).
5. Inspect (TI).





END OF TASK

2-3-88. PILOT LEFT OR RIGHT SCUFF PLATE REMOVAL/INSTALLATION 2-3-88

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer (2)
66R30 Inspector/Supervisor

Equipment Conditions:

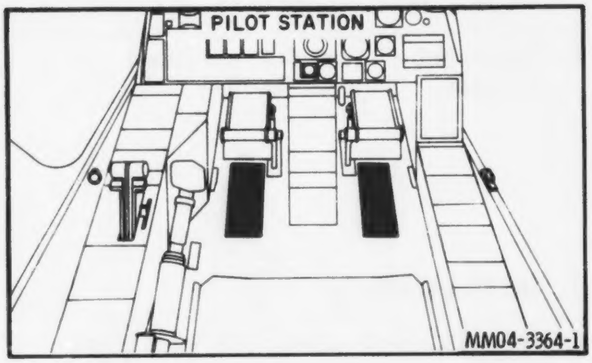
Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

NOTE

This task is typical for left or right pilot scuff plates.



GO TO NEXT PAGE

2-3-88. PILOT LEFT OR RIGHT SCUFF PLATE REMOVAL/INSTALLATION (cont) 2-3-88

2. **Remove scuff plate (1) from pilots floor (4).**

   a. Remove four screws (2) from nut plates (3).

   b. Remove scuff plate (1).

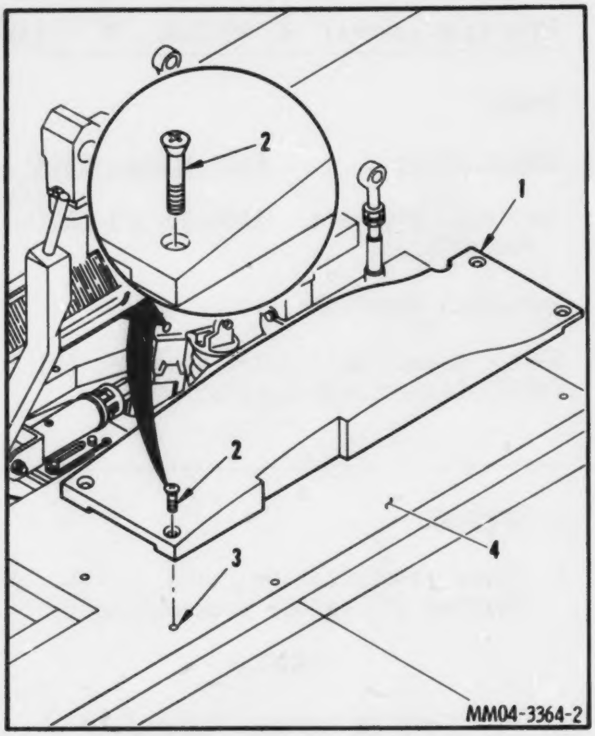
B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. **Check scuff plate for cracks or chips.** None allowed.

2. **Check nut plates for stripped threads.** None allowed.



MM04-3364-2

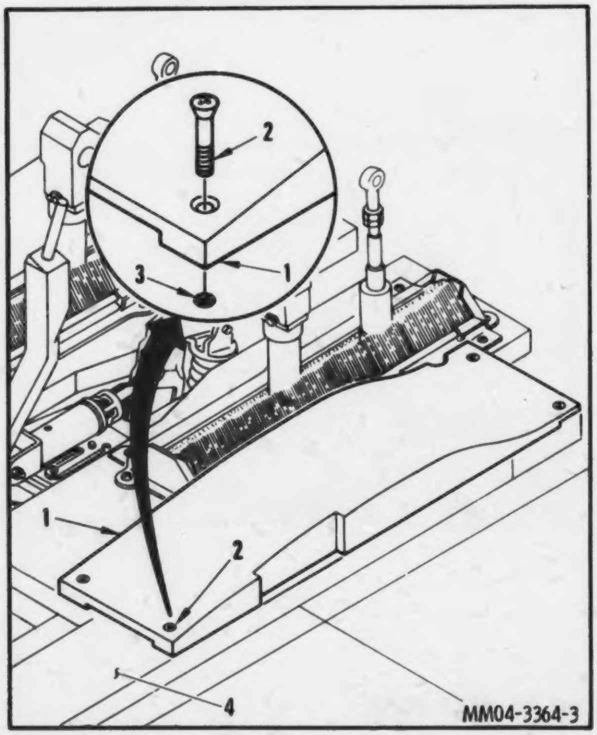
D. INSTALLATION

1. **Install scuff plate (1) to pilots floor (4).**

   a. Position scuff plate (1) to aline with nut plates (3).

   b. Install four screws (2) through scuff plate (1) and into nut plates (3).

2. **Inspect (TI).**



MM04-3364-3

END OF TASK

2-3-89. CPG LEFT OR RIGHT SCUFF PLATE REMOVAL/INSTALLATION 2-3-89

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

Personnel Required:

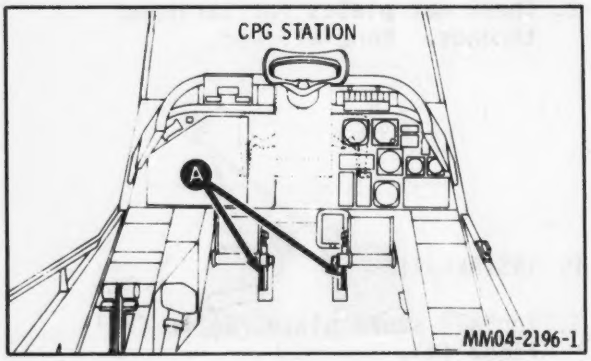
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

A. REMOVAL

1. **Enter CPG station (para 1-7-1). Observe all safety precautions.**

NOTE

This task is typical for left or right CPG scuff plates.



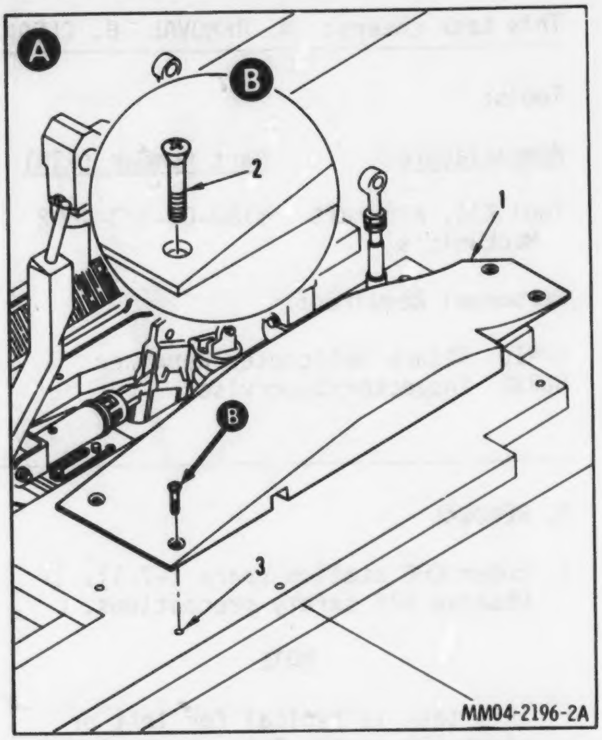
GO TO NEXT PAGE

2-3-89. CPG LEFT OR RIGHT SCUFF PLATE REMOVAL/INSTALLATION (cont) 2-3-89

2. **Remove scuff plate (1).**

   a. Remove four screws (2) from nut plates (3).

   b. Remove scuff plate (1).



B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. **Check scuff plate for cracks or chips (para 2-3-2).**

2. **Check nut plates for stripped threads. None allowed.**

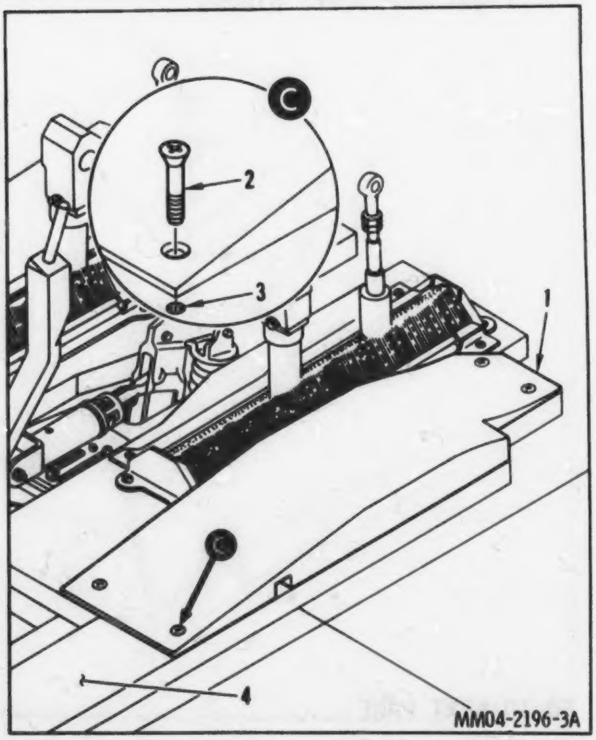
D. INSTALLATION

1. **Install scuff plate (1) to CPG's floor (4).**

   a. Position scuff plate (1) to aline with nut plates (3).

   b. Install four screws (2) through scuff plate (1) and into nut plates (3).

2. **Inspect (TI).**



END OF TASK

2-3-90. CPG LEFT OR RIGHT FLOOR ARMOR REMOVAL/INSTALLATION 2-3-90

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

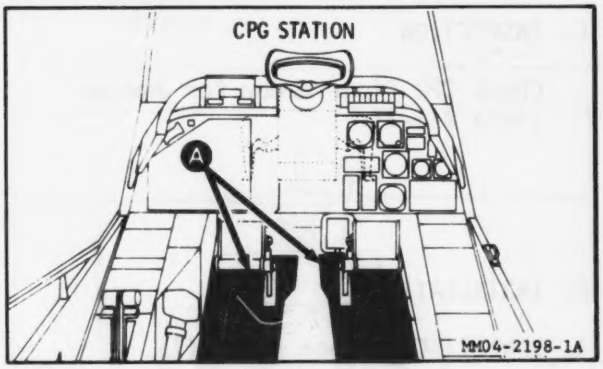
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-87	Protective covers removed
2-3-89	Scuff plates removed
11-5-64	Directional pedals removed
12-2-12	ICS foot switches removed

A. REMOVAL

1. Enter CPG station (para 1-7-1). Observe all safety precautions.



GO TO NEXT PAGE

2-3-90. CPG LEFT OR RIGHT FLOOR ARMOR REMOVAL/INSTALLATION (cont) 2-3-90

NOTE

The is typical for left or right floor armors.

2. Remove CPG floor armor (1).

   a. Remove five bolts (2) and five washers (3).

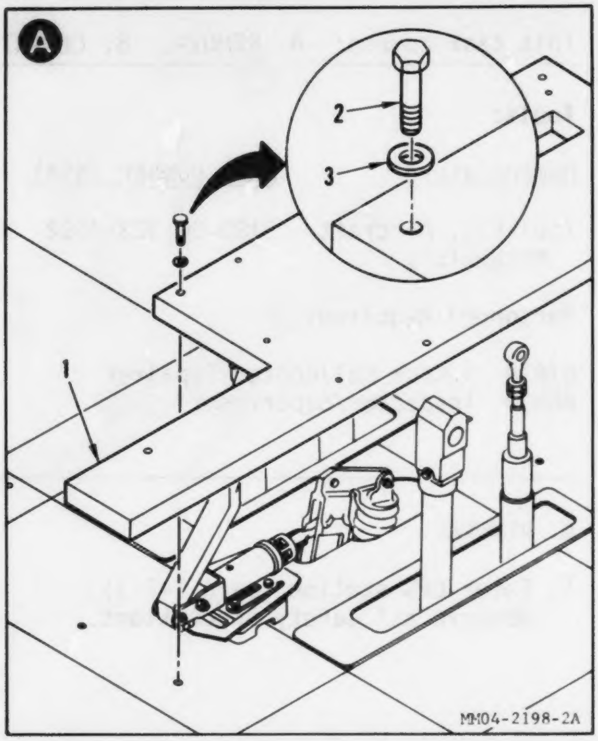
   b. Remove floor armor (1).

B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

Check CPG floor armor for damage (para 2-3-2).



D. INSTALLATION

1. Install CPG floor armor (1).

   a. Position floor armor (1) so attachment holes are properly alined.

   b. Install five washers (3) and five bolts (2).

2. Install directional pedals (para 11-5-68).

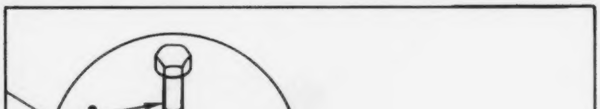
3. Install scuff plates (para 2-3-89).

4. Install protective covers (para 2-3-87).

5. Install ICS foot switches (para 12-2-12).

6. Inspect (TI).

END OF TASK



2-3-91. NOSE GEARBOX FAIRING AND SHROUD REMOVAL/INSTALLATION 2-3-91

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

(E106) Strap, Tiedown

Personnel Required:

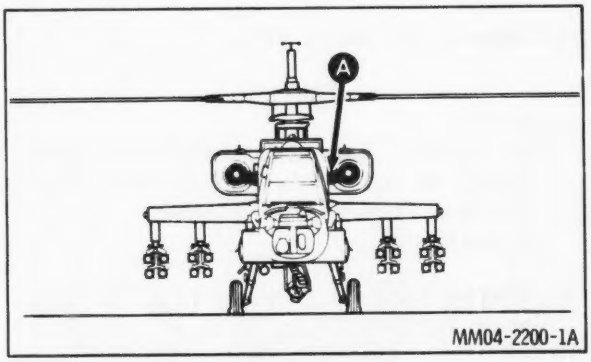
67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panels L200 and R200 removed



GO TO NEXT PAGE

2-3-91. NOSE GEARBOX FAIRING AND SHROUD REMOVAL/INSTALLATION (cont) 2-3-91

A. REMOVAL

NOTE

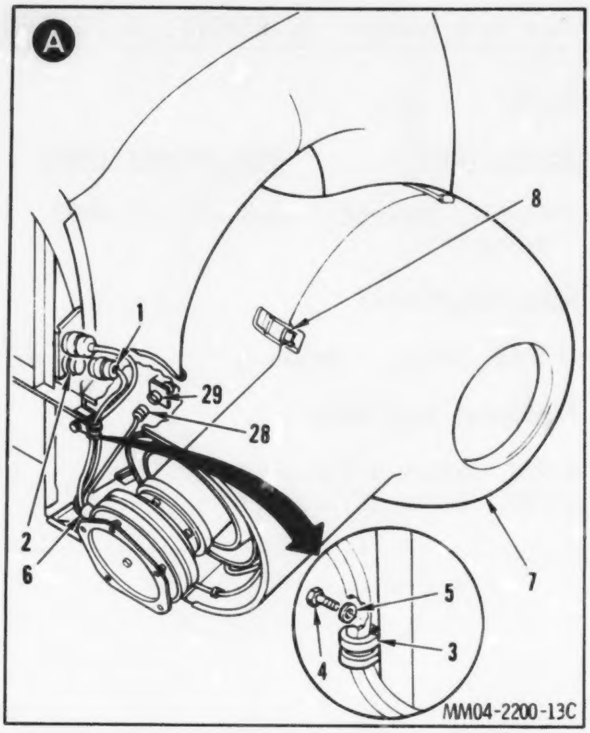
This task is typical for No. 1 and No. 2 nose gearbox fairings and shrouds.

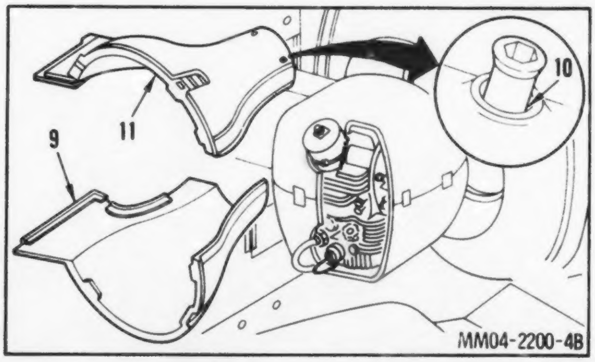
1. **On nose gearbox No. 1, detach connectors P47(1) and HR3 P2 (28) from connectors J47(2) and HR3 J2 (29).**
2. **On nose gearbox No. 2 detach connectors P48(1) and HR4 P2 (28) from connectors J48(2) and HR4 J2 (29).**
3. **Remove bolt (4), washer (5), and clamp (3).**
4. **Remove tie strap (6).**

CAUTION

To prevent damage to heater blanket lead, do not allow forward fairing to hang from heater blanket pigtail.

5. **Remove forward fairing (7).** Unlock four latches (8).
6. **Remove lower aft fairing (9).** Unscrew three stud nuts (10).
7. **Remove upper aft fairing (11).** Unscrew four stud nuts (10).





GO TO NEXT PAGE

2-3-91. NOSE GEARBOX FAIRING AND SHROUD REMOVAL/INSTALLATION (cont) 2-3-91

8. **Remove four tie-down straps (12).**

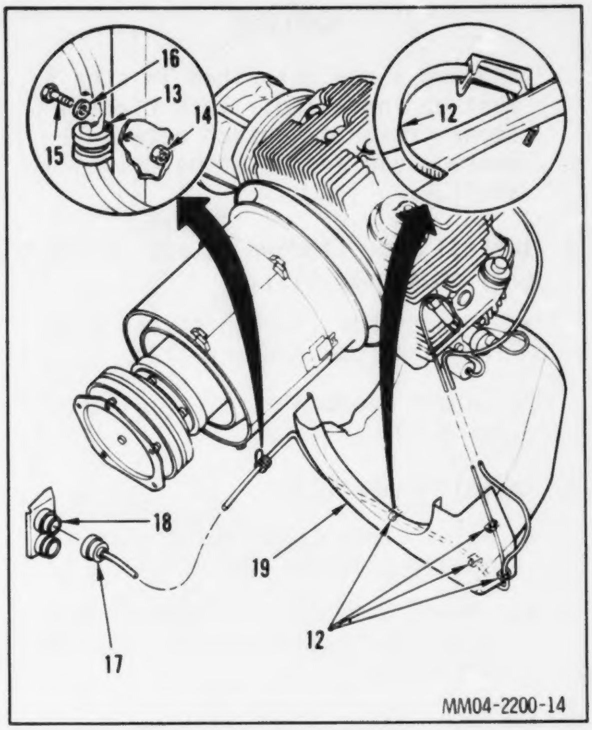
9. **Remove clamp (13).** Hold nut (14). Remove screw (15) and washer (16).

10. **Detach connector P61 (17) from connector J61 (18) on nose gearbox No. 1.**

11. **Detach connector P60 (17) from connector J60 (18) on nose gearbox No. 2.**

12. **Hold lower half of shroud in place while opening hook-and-pile fasteners.**

13. **Remove both halves of shroud (19) from gearbox (21).** Open hook-and-pile fasteners (20).



B. CLEANING

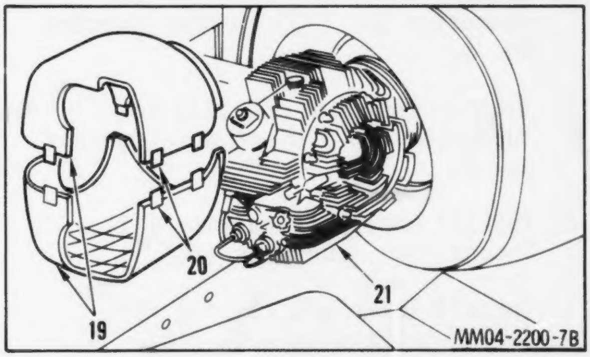
Wipe all removed and attaching parts with a clean rag.

C. INSPECTION

1. **Check fairings and shroud for cracks and nicks** (para 2-3-2).

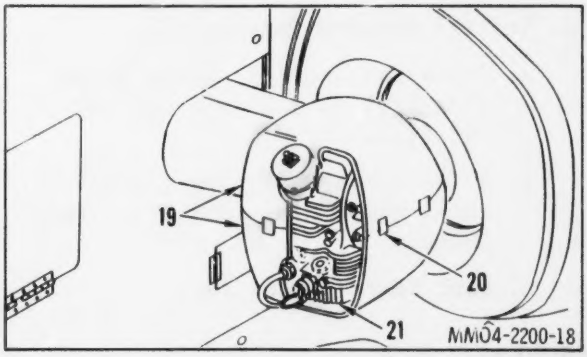
2. **Check for loose or missing hardware.**

3. **Check wires for damage** (para 2-3-1).



D. INSTALLATION

1. **Install shroud (19) on gearbox (21).**
   a. Position upper half of shroud (19) on gearbox (21).
   b. Aline lower half of shroud (19) to upper half of shroud (19).
   c. Hold lower half of shroud (19) in place. Fasten three hook-and-pile fasteners (20).



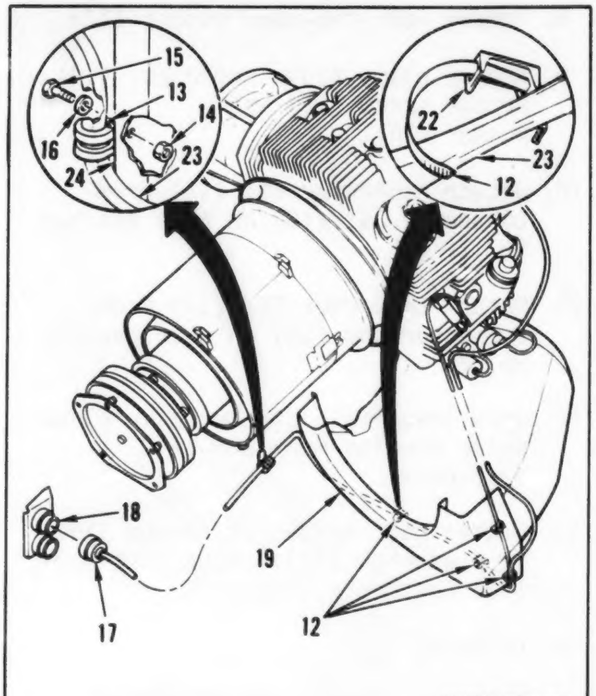
GO TO NEXT PAGE

2-3-91. NOSE GEARBOX FAIRING AND SHROUD REMOVAL/INSTALLATION (cont) 2-3-91

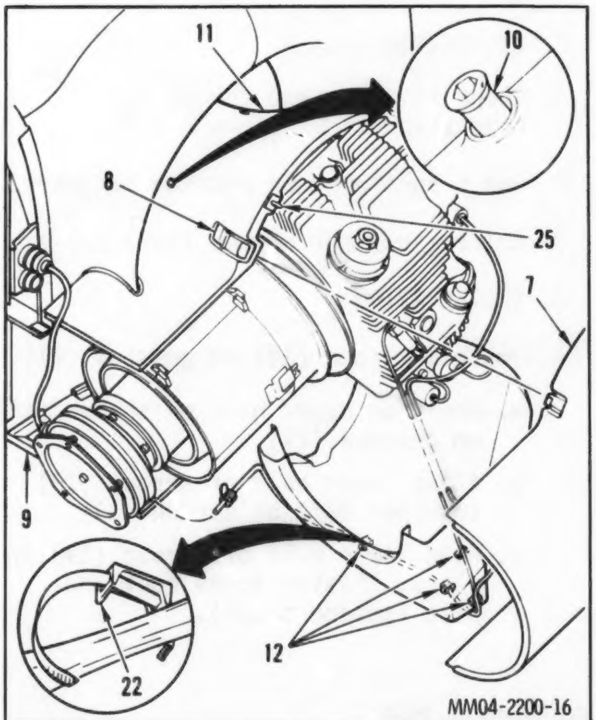
CAUTION

Tiedown strap described in step 8 must be installed. This tiedown strap prevents contact between heater lead and rotating drive shaft.

2. **Install four tiedown straps (E106) (12) on shroud (19).**
   - a. Insert four tiedown straps (12) through four anchors (22).
   - b. Secure tiedown straps (12) around wire bundle (23).
3. **Install clamp (13).**
   - a. Aline clamp (13) around wire bundle (23) and fan (24).
   - b. Insert bolt (15) through clamp (13) and install washer (16) and nut (14).
4. **Attach connector P61 (17) to connector J61 (18) on nose gearbox No. 1.**
5. **Attach connector P60 (17) to connector J60 (18) on nose gearbox No. 2.**
6. **Install upper aft fairing (11).** Secure four stud nuts (10).
7. **Install lower aft fairing (9).** Secure three stud nuts (10).
8. **Install forward fairing (7).**
   - a. Aline fairing (7), using guide pins (25) in aft fairings (9) and (11).
   - b. Slide forward fairing (7) aft until guide pins (25) are firmly seated.
   - c. Lock four latches (8).



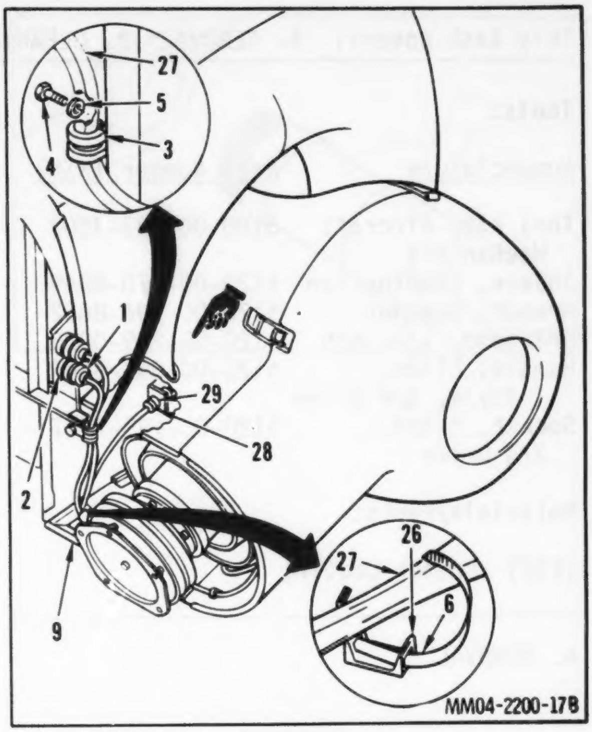
MM04-2200-15



MM04-2200-16

GO TO NEXT PAGE

2-3-91. NOSE GEARBOX FAIRING AND SHROUD REMOVAL/INSTALLATION (cont) 2-3-91



9. **Install tiedown strap (E106) (6) on lower aft fairing (9).**

    a. Insert tiedown strap (6) through anchor (26).

    b. Secure tiedown strap (6) around heater lead (27).

10. **Install clamp (3).**

    a. Place clamp (3) around heater lead (27).

    b. Install screw (4) and washer (5).

11. **On nose gearbox No. 1, attach connectors P47(1) and HR3 P2 (28) to connectors J47(2) and HR3 J2 (29).**

12. **On nose gearbox No. 2, attach connectors P48(1) and HR4 P2 (28) to connectors J48(2) and HR4 J2 (29).**

13. **Inspect (TI).**

14. **Perform engine anti-ice operational check** (TM 55-1520-238-T).

15. **Secure panels L200 and R200** (para 2-2-2).

END OF TASK

2-3-92. MAIN LANDING GEAR CROSS TUBE REMOVAL/INSTALLATION 2-3-92

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Square, Combination	5120-00-078-8949
Wrench, Spanner	5120-00-596-8652
Driftpin, 1/2-inch	5120-00-239-0036
Handle, Slide, T-Style, 3/4 Drive	5120-00-099-8544
Socket, 1-3/4, 3/4 Drive	5120-00-199-7767

Materials/Parts:

(E82) Primer Coating

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-12	Helicopter on fuselage jacks
3-2-15	Main landing gear shock struts removed
3-2-12	Main landing gear trailing arms removed

A. REMOVAL

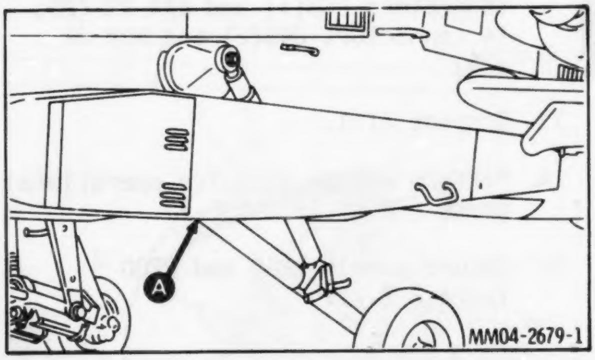
WARNING

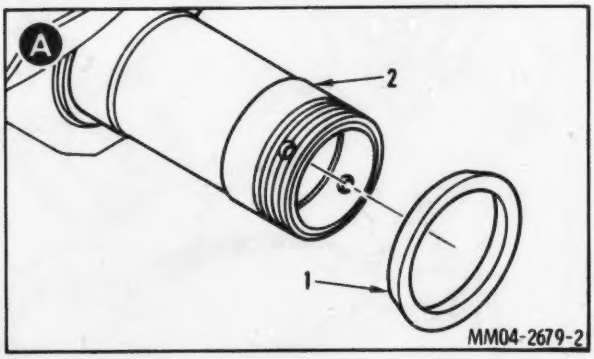
No personnel allowed in or on aircraft during jacking.

CAUTION

Be sure all stress panels are properly installed on aircraft.

1. **Remove two spacers (1) from main landing gear cross tube (2).**

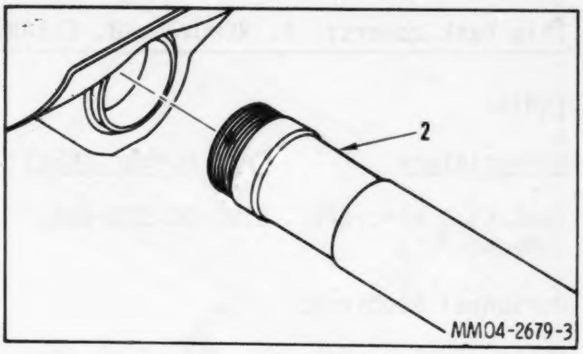




GO TO NEXT PAGE

2-3-92. MAIN LANDING GEAR CROSS TUBE REMOVAL/INSTALLATION (cont) 2-3-92

2. **Remove main landing gear cross tube (2).**



B. **CLEANING**

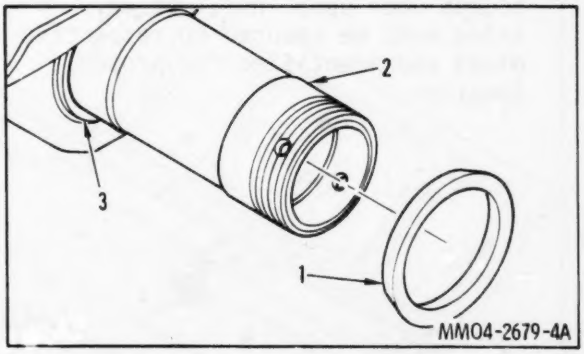
Clean attachment points and bearing surfaces of trailing arm and cross tube (para 1-5-36).

C. **INSPECTION**

1. **Check attachment points and bearings for cracks and wear.** Repairable limits after clean-up are no greater than 0.75-inch diameter and no greater than 0.215-inch deep. Negligible limits are not established.

2. **Check attachment points and bearings for corrosion** (para 1-5-38). Negligible limits for reworked area must not exceed 25 percent of cross-section. Such rework must affect less than 10 percent of thickness or 0.040-inch depth, whichever is less. Rework must clear fastener holes or threads by 0.50-inch. Damage which exceeds negligible limit requires replacement.

D. **INSTALLATION**



1. **Install cross tube (2).**
   a. Apply primer to mating surfaces of bearings (3) and cross tube (2). Use primer (E82).
   b. Install cross tube (2).
   c. Install two spacers (1) on cross tube (2).

3. **Install main landing gear trailing arm** (para 3-2-13).

4. **Install main landing gear shock struts** (para 3-2-16).

5. **Remove fuselage jacks** (para 1-7-12).

END OF TASK

2-3-93. ACCESS DOOR T290L OR T290R REMOVAL/INSTALLATION 2-3-93

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors T250L, T250R, T290L, T290R, and L325 opened

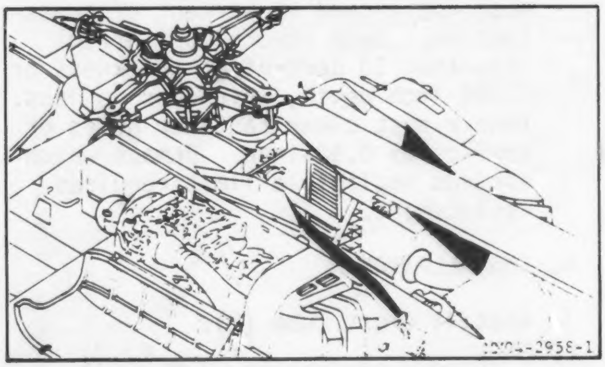
NOTE

This task is typical for T290L or T290R access doors.

A. REMOVAL

NOTE

Each access door is individually shimmed. To ensure proper fit of access door upon installation, shims must be secured to respective hinge and identified for proper location.



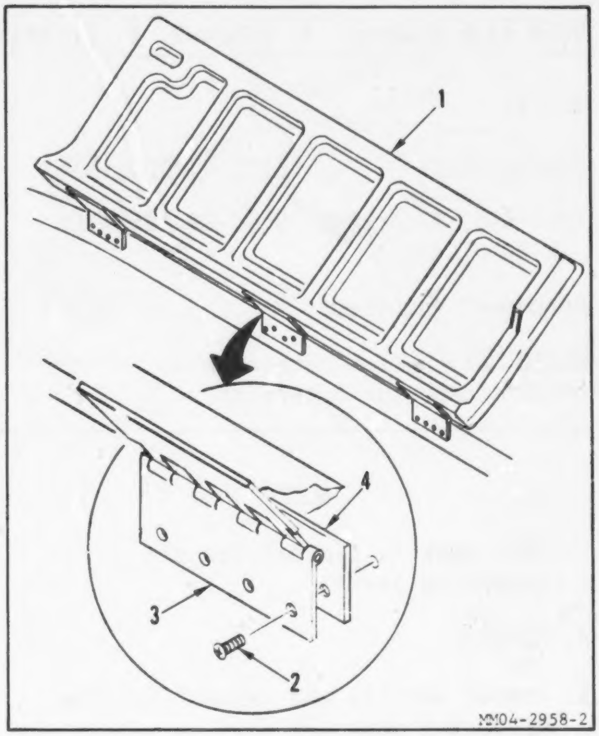
GO TO NEXT PAGE

2-3-93. ACCESS DOOR T290L OR T290R REMOVAL/INSTALLATION (cont) 2-3-93

1. **Remove access door (1).**

   a. With one person holding door (1), remove four screws (2) from three hinges (3).

   b. Remove shims (4). Secure to respective hinge. Identify for proper location.



MM04-2958-2

B. CLEANING

Wipe door and mounting area with clean rag.

C. INSPECTION

1. **Check door mount for cracks, nicks, dents, elongated bolt holes, and loose or missing nut plates** (para 2-3-2).

2. **Check door for cracks, nicks, dents, loose or missing hardware** (para 2-3-2).

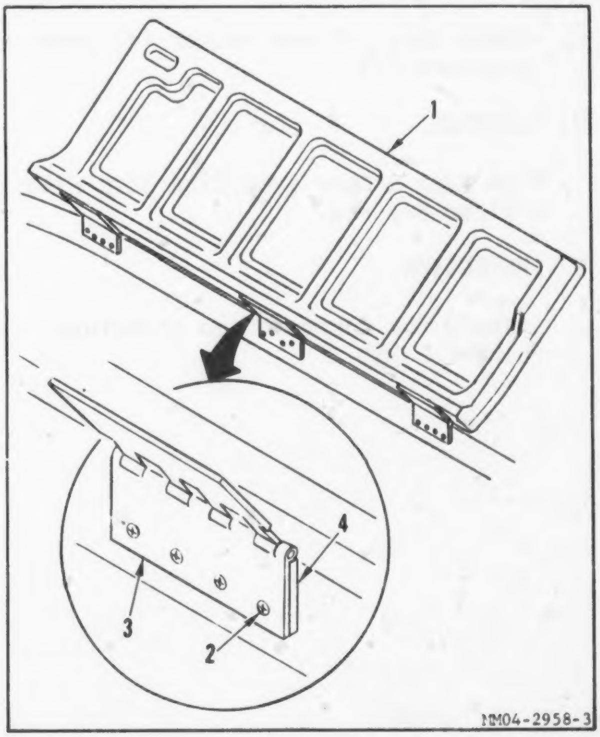
D. INSTALLATION

1. **Install door (1).**

   a. With one person holding door (1), mount shims (4) under hinges (3).

   b. Install four screws (2) in three hinges (3).

2. **Secure access doors T250L, T250R, T290L, T290R, and L325** (para 2-2-2).



MM04-2958-3

END OF TASK

2-3-94. GROUNDING JACK REPLACEMENT 2-3-94

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Electrician's	5180-00-323-4915

Personnel Required:

68R10 Aircraft Electrician
66R30 Inspector/Supervisor

References:

TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

NOTE

This task is typical for all grounding jacks.

A. REMOVAL

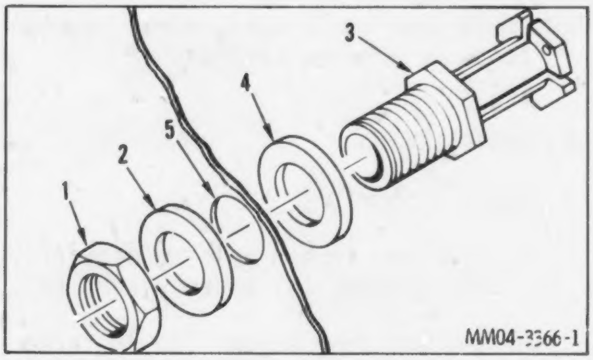
1. **Remove nut (1) and washer (2) from grounding jack (3).**
2. **Remove jack (3) and washer (4) from structure (5).**

B. CLEANING

Wipe area around grounding jack with a clean dry rag.

C. INSPECTION

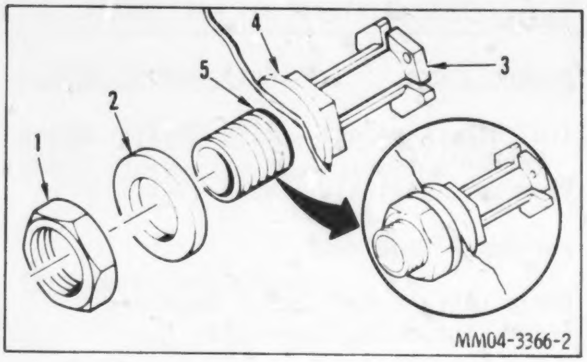
Inspect for corrosion on structure (para 1-5-38).



GO TO NEXT PAGE

2-3-94. GROUNDING JACK REPLACEMENT (cont) 2-3-94

D. INSTALLATION



1. Clean and prepare area around hole in structure (5) where jack (3) is to be mounted (TM 55-1500-323-25).
2. Install jack (3) through washer (4) and structure (5).
3. Hold jack (3). Install washer (2) and nut (1).
4. Perform resistance test (TM 55-1500-323-24).
5. Inspect (TI).

END OF TASK

2-3-95. ELECTROSTATIC DISCHARGER REPLACEMENT 2-3-95

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Ohmmeter, Digital	6625-01-125-3471

Personnel Required:

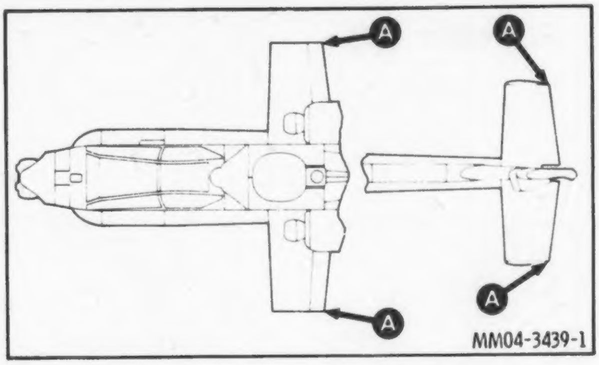
67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

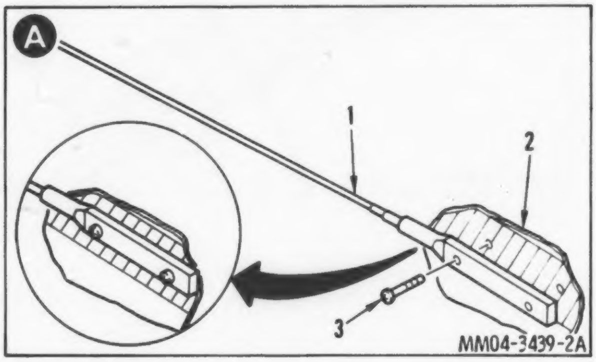
References:

TM 55-1500-345-23
TM 55-1500-323-24

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed





NOTE

This task is typical for left or right wing trailing edge and left or right horizontal stabilator tip.

A. **REMOVAL**

Remove electrostatic discharger (1) from airframe (2). Remove two screws (3).

B. **INSTALLATION**

1. **Strip airframe (2) around discharger (1) placement point to bare metal** (TM 55-1500-345-23).
2. **Chemically treat stripped area of airframe (2)** (TM 55-1500-345-23).

NOTE

Bond resistance not to exceed one ohm. Repeat steps 1. thru 3 if bond resistance exceeds one ohm.

3. **Perform electrical bond check on attaching area** (TM 55-1500-323-24).
4. **Inspect** (TI).
5. **Install two screws (3) through discharger (1) into airframe (2).**

END OF TASK

2-3-96. UPPER CANOPY PANEL REMOVAL/INSTALLATION 2-3-96

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

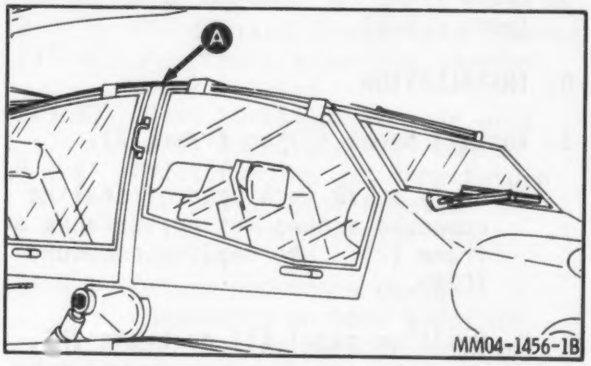
(E28) Sealing Compound

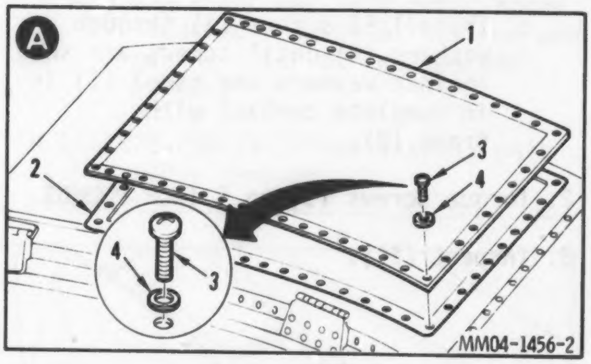
Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed





A. REMOVAL

1. **Remove canopy panel (1) from frame (2).** Remove 53 screws (3) and washers (4).

   a. Break bead of sealing compound.

   b. Remove panel (1) from frame (2).

GO TO NEXT PAGE

2-3-96. UPPER CANOPY PANEL REMOVAL/INSTALLATION (cont) 2-3-96

B. CLEANING

1. Clean sealing compound residue from frame (para 1-5-36).

2. Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. Check canopy panel and frame for cracks and wear (para 2-3-2).

2. Check frame for corrosion (para 1-5-38).

3. Check frame for damaged screw holes (para 2-3-2).

D. INSTALLATION

1. Install panel (1) on frame (2).

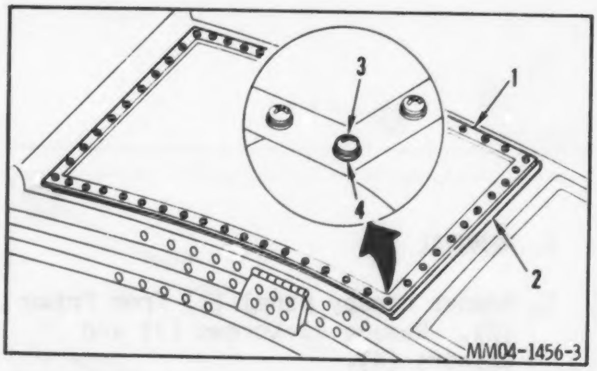
   a. Apply a 1/8-inch bead of sealing compound around mating surfaces of frame (2). Use sealing compound (E28).

   b. Position panel (1) on frame (2).

   c. Install 53 screws (3) through washers (4) until screws are snug against washers and panel (1) is in complete contact with frame (2).

2. Torque screws (3) to 5 INCH-POUNDS.

3. Inspect (TI).



END OF TASK

2-3-97. TRANSPARENT BARRIER REPLACEMENT 2-3-97

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

(E32) Cloth, Lint-free
(E41) Tape, Duct

Personnel Required:

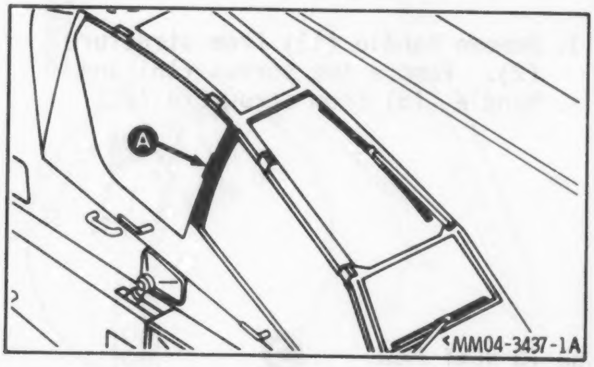
67R10 Attack Helicopter Repairer (2) One to assist
66R30 Inspector/Supervisor

References:

TM 11-1520-238-23-1
TM 9-1270-221-23
TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-22	Pilot station access door removed
2-3-28	CPG station access door removed
2-3-98	Canopy door struts anchor removed
2-3-42	Left vertical glareshield removed
2-3-43	Right vertical glareshield removed
8-4-2	Pilot magnetic compass removed
2-3-75	Pilot fixed glareshield removed
2-3-16	Upper nontransparent barrier armor removed
2-3-83	Pilot boresight reticle unit (BRU) mount support removed
8-2-6	Pilot turbine gas temperature (TGT) indicator removed
9-8-6	Pilot circuit breaker panel removed
12-6-2	Canopy severance device components on both sides of transparent barrier removed
13-3-12	CPG right and left defog hoses detached from pilot station and pulled clear of transparent barrier
TM 11-1520-238-23	Video display unit (VDU) removed

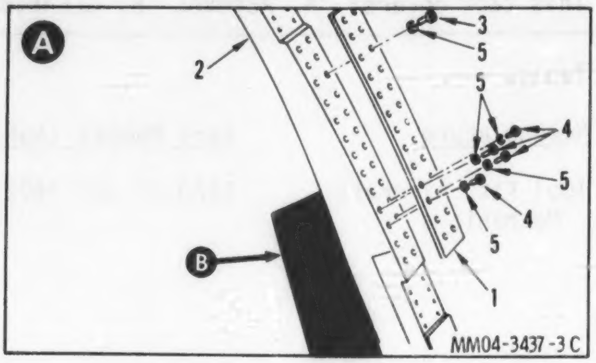


GO TO NEXT PAGE

2-3-97. TRANSPARENT BARRIER REPLACEMENT (cont) 2-3-97

A. REMOVAL

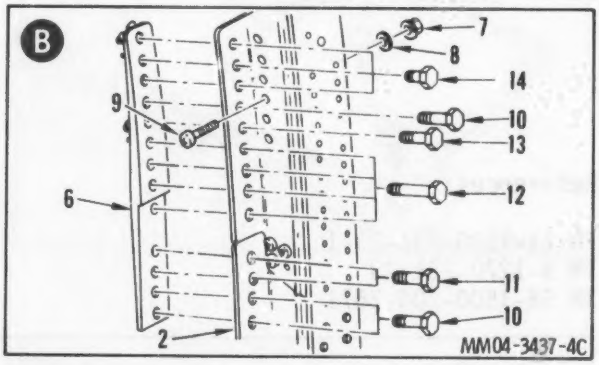
1. **Remove right outboard strap (1) from rollover structure (2).**
   a. Remove 22 screws (3), 4 screws (4), and 26 washers (5) from strap (1) and rollover structure (2).
   b. Remove strap (1) from structure (2).



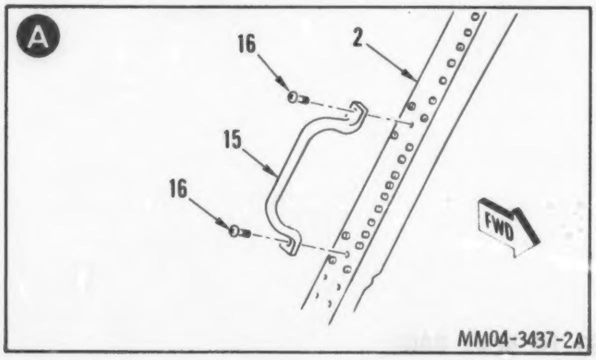
CAUTION

Do not damage canopy transparent panels when performing maintenance in or around pilot and CPG stations.

2. **Remove right inboard strap (6) from structure (2).**
   a. Remove six nuts (7), washers (8), and screws (9).
   b. Remove three bolts (10), two bolts (11), four bolts (12), one bolt (13), and three bolts (14).
   c. Remove strap (6) from structure (2).



3. **Remove handle (15) from structure (2).** Remove two screws (16) and handle (15) from structure (2).



GO TO NEXT PAGE

4. **Remove right zee channel (17) from structure (2).**

   a. Remove 10 screws (3), 14 screws (18), and 24 washers (5) from channel (17) and structure (2).

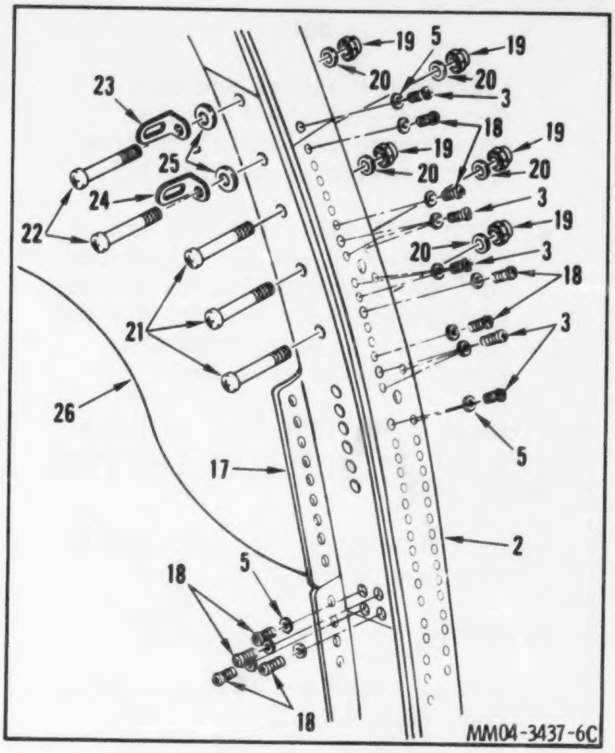
   b. Remove five nuts (19), five washers (20), three screws (21), two screws (22), upper right clip (23), lower right clip (24), and two washers (25) from channel (17) and transparent barrier (26).

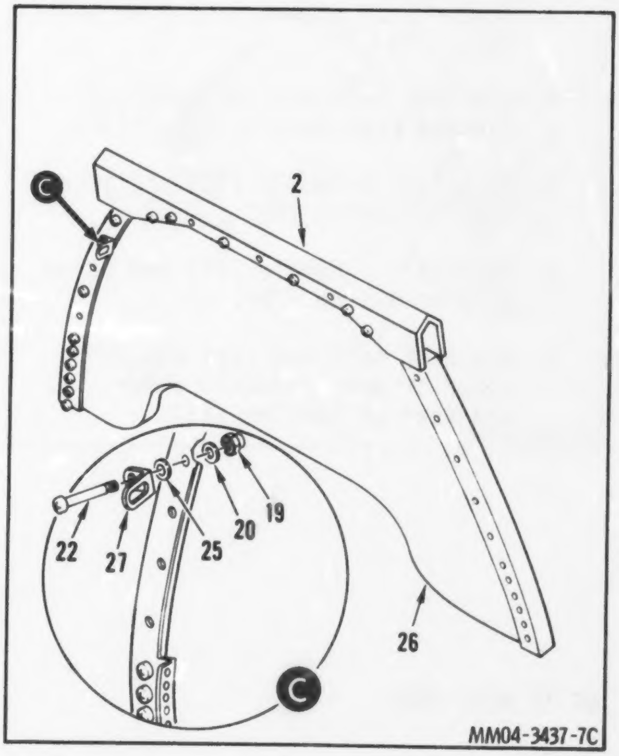
   c. Remove right channel (17) from structure (2).

NOTE

Pilot left vertical visor lower mounting clip was removed with severance device mounting components.

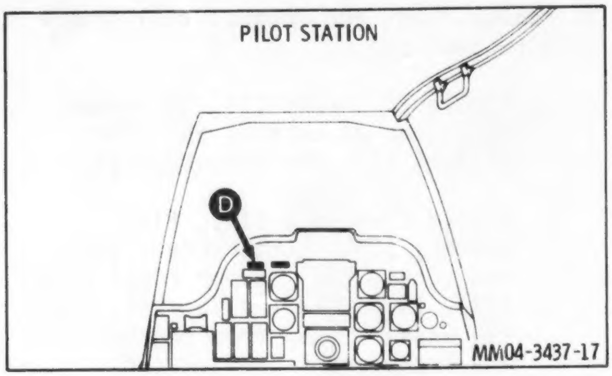
5. **Remove pilot vertical visor upper left mounting clip (27) from barrier (26) and structure (2).** Remove nut (19), washer (20), screw (22), clip (27), and washer (25) from barrier (26).





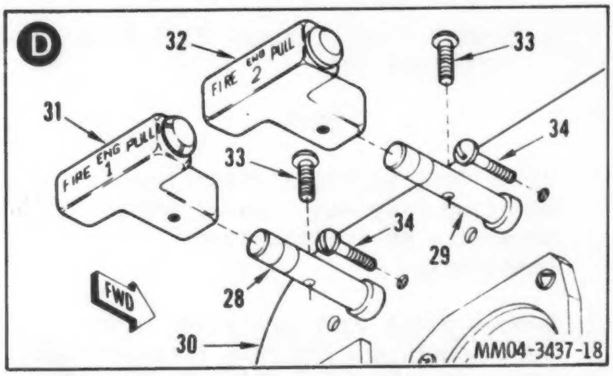
GO TO NEXT PAGE

2-3-97. TRANSPARENT BARRIER REPLACEMENT (cont) 2-3-97



NOTE

- **FIRE PULL** switches are manufactured with the T-handle mounting screws installed from top or bottom of switch shaft.
- Pilot **FIRE PULL** switches are dismounted to provide clearance for removal/installation of the transparent barrier, and are not completely removed from the helicopter for this task.



6. **Dismount pilot FIRE PULL switches (28) and (29) from pilot instrument panel (30).**

   a. Pull T-handles (31) and (32) to extended position.

   b. Remove two screws (33).

   c. Remove T-handles (31) and (32) from switches (28) and (29).

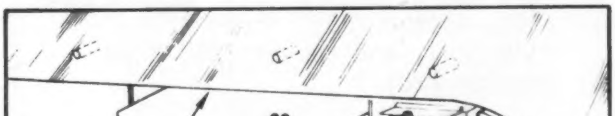
   d. Remove four screws (34) from panel (30).

   e. Withdraw switches (28) and (29) forward from back of panel (30).

   f. Reinstall T-handle (31) and screw (33) on switch (28).

   g. Reinstall T-handle (32) and screw (33) on switch (29).

   h. Position switches (28) and (29) clear of area directly under transparent barrier (26).

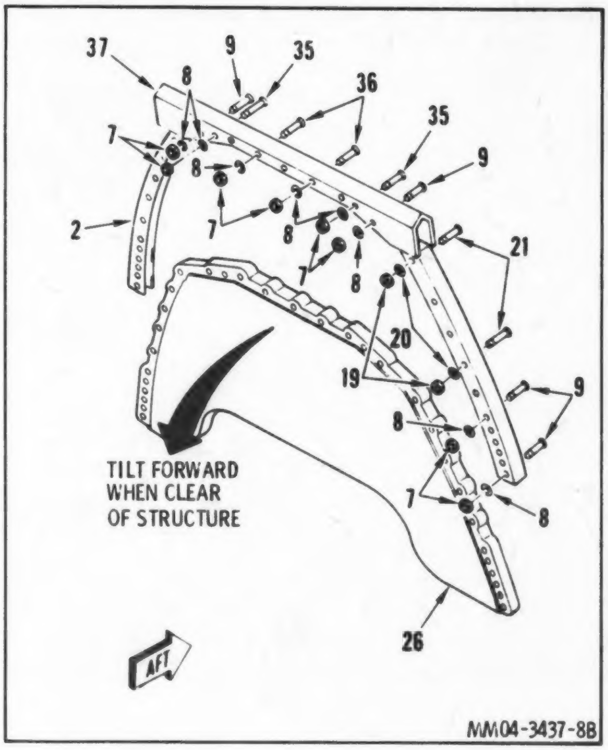


GO TO NEXT PAGE

CAUTION

- Do not damage transparent barrier or pilot instrument panel when handling or positioning barrier.
- To prevent damage to transparent barrier, ensure that all sharp edges or corners of structure are covered with tape (E41).
- Do not damage canopy transparent panels when performing maintenance in or around pilot or CPG stations.

7. **Remove barrier (26) from structure (2).**
   a. Remove 11 nuts (7) and washers (8).
   b. Remove two nuts (19) and washers (20).
   c. Remove eight screws (9), two screws (21), and two screws (35).
   d. Have assistant support weight of barrier (26) from CPG station.
   e. Remove two screws (36). Lower barrier (26) to clear upper channel (37) of structure (2).
   f. Tilt top of barrier approximately 1-1/2 inches forward as barrier clears top of upper channel (37).
   g. Place barrier (26) in suitable container to prevent damage.



MM04-3437-88

GO TO NEXT PAGE

B. CLEANING

1. Clean structure (para 1-5-36).
2. Clean barrier with clean, dry, lint-free cloth.

C. INSPECTION

1. Inspect barrier attaching area for cracks. None allowed.
2. Inspect barrier for surface scratches, gouges, and severe crazing. None allowed.
3. Inspect structure for damage (para 2-3-2).

GO TO NEXT PAGE

D. INSTALLATION

CAUTION

- Do not damage transparent barrier when handling, positioning, and installing in helicopter.
- Do not damage canopy transparent panels when performing maintenance in or around pilot and CPG stations.

1. **Position barrier (26) in structure (2).**

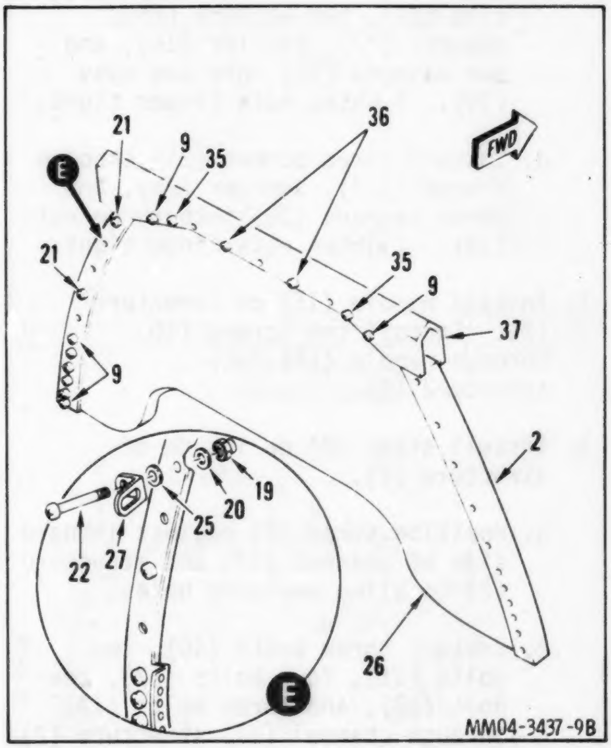
   a. Carefully position barrier (26) from pilot station over panel (30); with top of barrier tilted slightly forward.

   b. Carefully lower barrier (26) until top of barrier can be inserted into upper channel (37). Raise barrier into structure (2) to aline mounting holes.

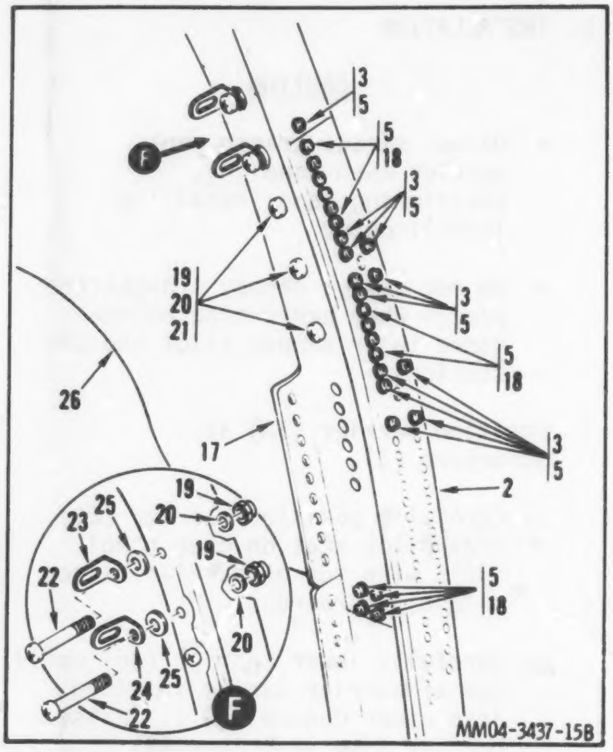
   c. With assistant holding barrier (26) in place, install two screws (36) through channel (37) and barrier (26).

   d. Install two screws (35), two screws (21), and eight screws (9) through structure (2) and barrier (26).

   e. Install screw (22) through pilot vertical visor upper left mounting clip (27), washer (25), structure (2), barrier (26), washer (20) into nut (19). Tighten nut fingertight.



GO TO NEXT PAGE



2. **Install right channel (17) in structure (2).**

   a. Aline channel (17) to mounting holes with holes in structure (2) and transparent barrier (26).

   b. Install 14 screws (18), 10 screws (3) through 24 washers (5), channel (17, rollover structure (2).

   c. Install two screws (22) through upper right clip (23), lower right clip (24), two washers (25), channel (17), barrier (26), and two washers (20) into two nuts (19). Tighten nuts finger tight.

   d. Install three screws (21) through channel (17), barrier (26), and three washers (20) into three nuts (19). Tighten nuts fingertight.

3. **Install handle (15) on structure (2).** Install two screws (16) through handle (15) into structure (2).

4. **Install strap (6) on inside of structure (2).**

   a. Position strap (6) against inboard side of channel (17) and structure (2) to aline mounting holes.

   b. Install three bolts (10), two bolts (11), four bolts (12), one bolt (13), and three bolts (14) through channel (17) structure (2) into inboard strap (6).

   c. Install six screws (9) through channel (17), barrier (26), six washers (8) and six nuts (7). Tighten nuts fingertight.

GO TO NEXT PAGE

2-3-97. TRANSPARENT BARRIER REPLACEMENT (cont) 2-3-97

NOTE

Steps 4 and 5 reinstall mounting provisions for the canopy severance devices and the pilot vertical glareshield. The system installations will be completed after the transparent barrier installation is complete.

5. **Install removed components of pilot and CPG severance device on both sides of transparent barrier** (para 12-6-2). Tighten line connections and mounting hardware fingertight. Do not complete the system connections at this time.

CAUTION

To prevent damage to transparent barrier, do not overtighten attaching hardware. Standard torques are in TM 55-1500-204-25/1.

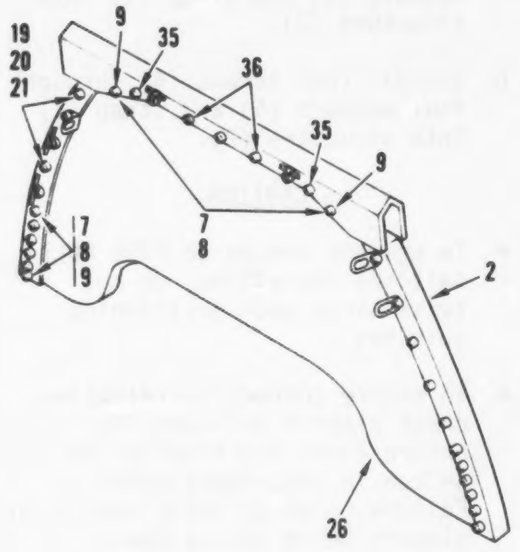
6. **Complete installation of barrier (21) in structure (2).**

   a. Install 12 washers (8) and 12 nuts (7) on 8 screws (9), 2 screws (36) and 2 screws (35) on forward side of barrier (26).

   b. Install five washers (20) and five nuts (19) on five screws on forward side of barrier (26).

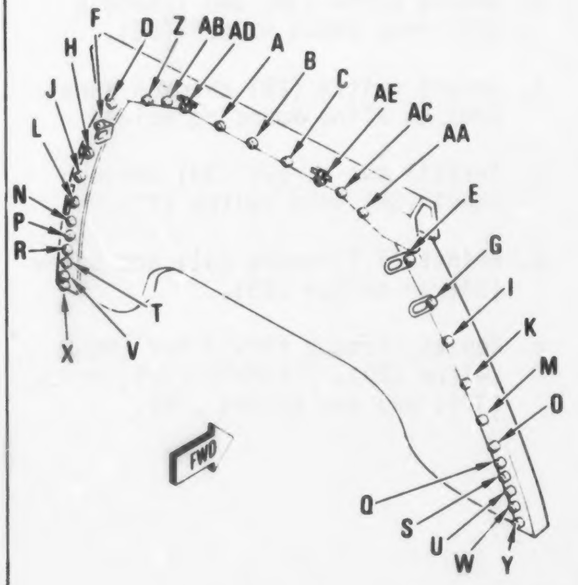
   c. Tighten attaching hardware, using sequence chart.

   d. Remove protective tape from structure and barrier.



MM04-3437-10B

SCREW TIGHTENING SEQUENCE CHART



MM04-3437-11B

GO TO NEXT PAGE

2-3-97. TRANSPARENT BARRIER REPLACEMENT (cont) 2-3-97

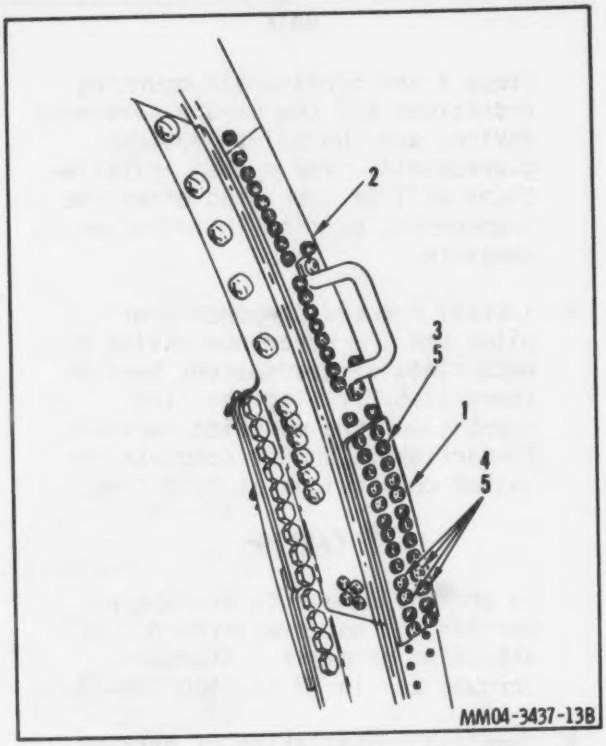
7. **Install strap (1) on structure (2).**

   a. Install 22 screws (3) through 22 washers (5) and strap (1) into structure (2).

   b. Install four screws (4) through four washers (5) and strap (1) into structure (2).

CAUTION

- To prevent damage to FIRE PULL switches and wiring, do not twist wires when positioning switches.
- To ensure correct installation, check placard on T-handles before final installation of switch in instrument panel. Failure to do so could result in placard being upside down.



MM04-3437-13B

8. **Mount pilot FIRE PULL switches (28) and (29) into panel (30).**

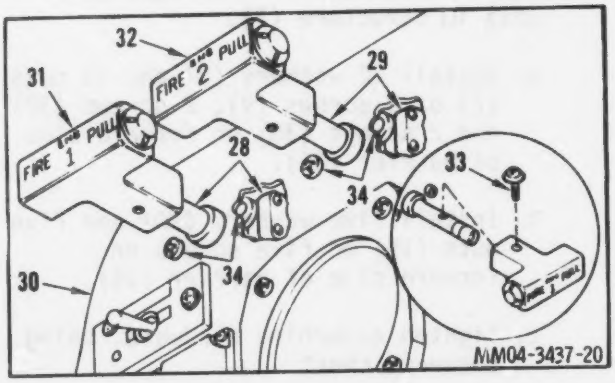
   a. Remove screw (33) and T-handle (31) from ENG-1 switch (28).

   b. Insert switch (28) through panel (30) to aline mounting holes.

   c. Install two screws (34) through panel (30) into switch (28).

   d. Reinstall T-handle (31) and screw (33) on switch (28).

   e. Repeat steps a thru d for ENG-2 switch (29), T-handle (32), screw (33), and two screws (34).



MM04-3437-20

GO TO NEXT PAGE

9. Inspect (TI).
10. Complete installation of canopy severance device (para 12-6-2).
11. Install pilot circuit breaker panel (para 9-8-7).
12. Install pilot turbine gas temperature (TGT) indicator (para 8-2-6).
13. Install video display unit (TM 11-1520-238-23-1).
14. Install pilot boresight reticle unit (BRU) mount support (para 2-3-83).
15. Install pilot fixed glareshield (para 2-3-75).
16. Install pilot magnetic compass (para 8-4-2).
17. Install pilot left vertical glareshield (para 2-3-42).
18. Install pilot right vertical glareshield (para 2-3-43).
19. Install upper nontransparent barrier armor (para 2-3-16).
20. Install CPG left and right defog hoses (para 13-3-13).
21. Install canopy door struts anchor (para 2-3-98).
22. Install CPG station access door (para 2-3-28).
23. Install pilot station access door (para 2-3-22).

END OF TASK

2-3-98. CANOPY DOOR STRUTS ANCHOR REMOVAL/INSTALLATION 2-3-98

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-22	Pilot station access door removed
2-3-28	CPG station access door removed

A. REMOVAL

1. Hold anchor (1) and remove nut (2), and washer (3).
2. Remove anchor (1) and washer (3) from aft side of transparent barrier (4).

B. CLEANING

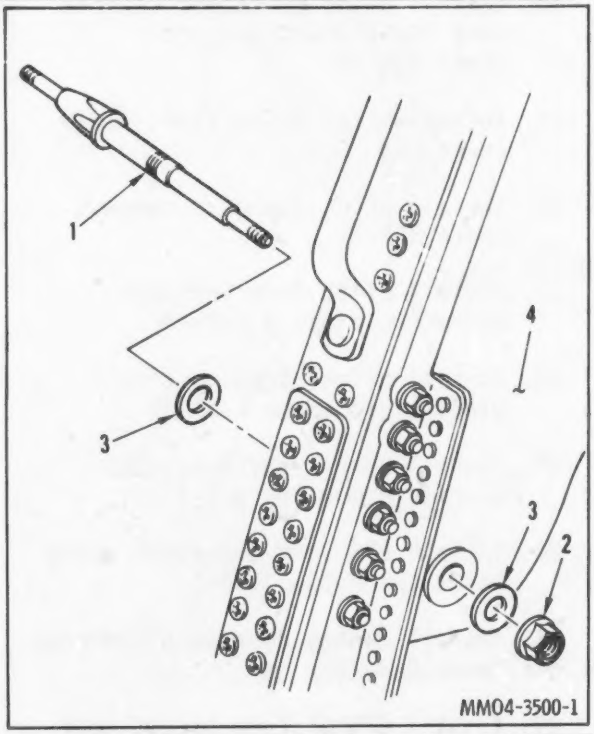
Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

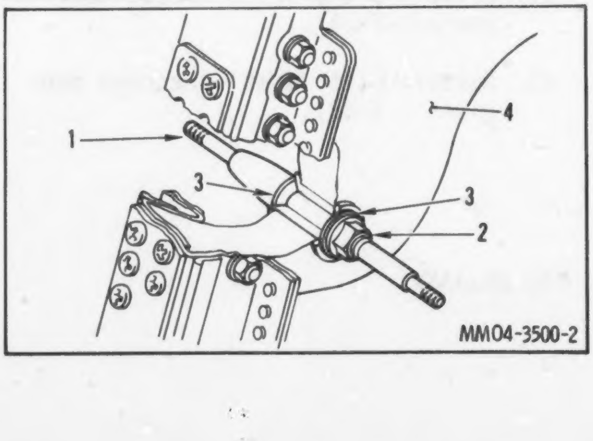
Check anchor and barrier for damage. None allowed.

D. INSTALLATION

1. Insert anchor (1) through washer (3) and barrier (4) from pilot station.
2. Hold anchor (1). Install washer (3) and nut (2) from CPG station.
3. Inspect (TI).
4. Install CPG station door (para 2-3-28).
5. Install pilot station door (para 2-3-22).



MM04-3500-1



MM04-3500-2

END OF TASK

Section IV. EMPENNAGE MAINTENANCE

2-4-1. EMPENNAGE INSPECTION 2-4-1

NOTE

Refer to para 2-4-2 for damage limits and corrective action.

A. FUSELAGE

1. Check skin panels, access covers, doors, and fairings for corrosion, cracks, tears, punctures, loose or missing fasteners, and working rivets.

2. Check honeycomb panels for cracks, tears, or punctures.

3. Check steps for corrosion, cracks, and condition of anti-skid coating.

4. Check structural attach points for wear caused by movement. No movement is allowed at these attach points.

5. Check for foreign objects and corroded, bent, broken, loose, and missing pins if electrical connectors are disconnected. Check connector operation for smooth, positive locking action. Check wire harnesses for chafing and loose installation. Refer to TM 55-1500-323-24 for wire and connector repair.

6. Check for cracks at frame FS530 and FS547 forward faces. Use flashlight and mirror.

7. Check for cracks along all stringers attached to frames FS530 and FS547, especially within 6 inches of frame attach points.

B. VERTICAL STABILIZER

1. Check skin panels, access covers, doors, and fairings for corrosion, cracks, tears, punctures, and loose or missing fasteners.

2. Check fittings, castings, and forgings for corrosion and cracks.

3. Check structural attach points for evidence of wear due to movement. No movement is allowed at these attach points.

4. Check entire length of all stringers under vertical stabilizer mounts for cracks and working rivets.

C. HORIZONTAL STABILIZER

1. Check skin panels, access covers, doors, and fairings for corrosion, cracks, tears, punctures, and loose or missing fasteners.

2. Check fittings, castings, and forgings for corrosion and cracks.

3. Check stabilator pivot bolts and self-alining bearings, one at a time, for surface discoloration and roughness.

4. Check leading edge cover for tears. None allowed.

D. GENERAL (Fittings, Castings, Forgings)

1. Nicks, scratches, and gouges which do not develop into cracks are generally acceptable if sharp edges can be blended and damage does not interfere with operation of components.

2. Remove minimal material to smooth sharp edges if blending is required.

3. Cracks are generally not acceptable. Use approved nondestructive testing methods to determine if cracks exist.

4. If working rivets are found, refer to TM 55-1500-204-25/1.

END OF TASK

2-4-2. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR 2-4-2

This task covers: A. DAMAGE LIMITS CATEGORIES B. TYPES OF DAMAGE (EXAMPLES): LIMITS AND ACTION C. CORROSION D. IMPACTOR FATIGUE DAMAGE

A. DAMAGE LIMITS CATEGORIES

Damage categories are assigned to help you establish repairable limits for particular areas and parts. Only applicable categories are listed for a damaged area or part.

Category	Description
A	Negligible damage to be repaired at first opportunity
B	Minor damage requiring immediate action with temporary repair
C	Major damage requiring immediate repair/replacement

B. TYPES OF DAMAGE (EXAMPLES): LIMITS AND ACTION

Category	Limits	Action
1. Type: Skin Corrosion		
A	Less than 20 percent of skin thickness and no more than 25 percent of panel area	Remove corrosion (para 1-5-38).
B	More than 20 percent of skin thickness and less than 50 percent of panel with no effect on adjacent structure	Patch repair (TM 55-1500-204-25/1) not to exceed 25 percent of total panel.
C	More than 50 percent of skin thickness	Replace affected area with patch repair (TM 55-1500-204-25/1).
2. Type: Skin or Sheet Metal Holes, Cracks, or Tears		
A	---	---
B	---	---
C	No cracks or tears more than 25 percent of shortest skin panel dimension	Clean up and patch repair (TM 55-1500-204-25/1).
	No holes greater than 3.00-inch diameter (cleanup can be no closer than 2.00 inches to support structure).	Clean up and patch repair (TM 55-1500-204-25/1).

GO TO NEXT PAGE

2-4-2. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR (cont) 2-4-2

C. CORROSION

Category	Limits	Action
1. Structural		
A	Less than 10 percent of material thickness across 25 percent of cross section.	Remove corrosion (para 1-5-38).
B	Greater than 10 percent of material thickness but less than 50 percent of cross section.	Patch repair (TM 55-1500-204-25/1) as long as area remaining allows attaching repair.
C	Greater than minor damage.	Replace.
2. Castings, Forgings		
A	Less than 25 percent of cross section and less than 10 percent of thickness or 0.040-inch depth.	Repair corroded area (TM 55-1500-204-25/1).
B	Exceeds A.	Replace.
3. Fasteners, Bearings, and Bushings		
A	Removable or allowed to remain without affecting size or function. (Stabilator pivot bolts and self-alining bearings allowed discoloration below surface coating, surface pits, and/or scratches less than 0.005 INCH after polishing with abrasive cloth (E109) to remove roughness. Surface coating must not be removed.)	Repair (TM 55-1500-204-25/1).
B	Exceeds A.	Replace.
4. Covers		
A	Not applicable	
B	Less than 10 percent of material thickness and less than 4.00 square inches after cleanup.	Repair (TM 55-1500-204-25/1).
C	Exceeds B or repairs will affect function.	Replace.

GO TO NEXT PAGE

2-4-2. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR (cont) 2-4-2

Category	Limits	Action
5. Step Assembly		
B	Less than 10 percent of wall thickness or 25 percent of tube circumference in length or width after cleanup	Repair (TM 55-1500-204-25/1).
C	Exceeds B	Repalce.
6. Stabilator Actuator		
A	Less than 25 percent of cross section and less than 10 percent of thickness or 0.040-inch depth (whichever is smaller). (Reworked area must clear fastener holes or counterbores by not less than 0.50-inch.)	Repair (TM 55-1500-204-25/1).
B	Exceeds A	Replace.
D. IMPACT OR FATIGUE DAMAGE		
1.	Skin or Sheet Metal Holes, Cracks, or Tears	
B	Holes: less than 3.00 inches diameter. (Cleanup can be no closer than 2.00 inches to supporting structure, and no more than 5 percent of skin areas.)	Clean up and patch repair (TM 55-1500-204-25/1).
B	Cracks or tears: no longer than 25 percent of shortest skin dimension.	Clean up and patch repair (TM 55-1500-204-25/1).

GO TO NEXT PAGE

2-4-2. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR (cont) 2-4-2

Category	Limits	Action
2. Skin or Sheet Metal Nicks or Scratches		
A	Less than 10 percent of material thickness	Clean up (para 1-5-36). (Area cannot exceed 4.00 square inches.)
B	Deeper than 10 percent but less than 25 percent of material thickness	Clean up (para 1-5-36). (Area cannot exceed five percent of skin area and can be no closer than 2.00 inches to supporting structure.)
C	Exceeds B	Replace.
3. Skin Dents		
A	Smooth dents less than 0.25-inch deep	Repair (TM 55-1500-204-25/1).
B	Dents with nicks or gouges or deeper than 0.25-inch	Patch repair (TM 55-1500-204-25/1).
C	Dents greater than 3.00 inches in diameter or cleanup will exceed 5 percent of skin area or will be closer than 2.00 inches to supporting structure	Clean up and remove any sharply bent sections or other damaged sections that could result in fatigue crack initiation/ progressive fatigue crack failure. Patch repair "damage clean" section (TM 55-1500-204-25/1).
4. Cover Cracks, Tears, and Punctures		
B	Less than 25 percent length of shortest dimension	Repair (TM 55-1500-204-25/1).
C	Exceeds B	Replace.
5. Stabilator Actuator Fitting Cracks		
C	Any crack	Replace.

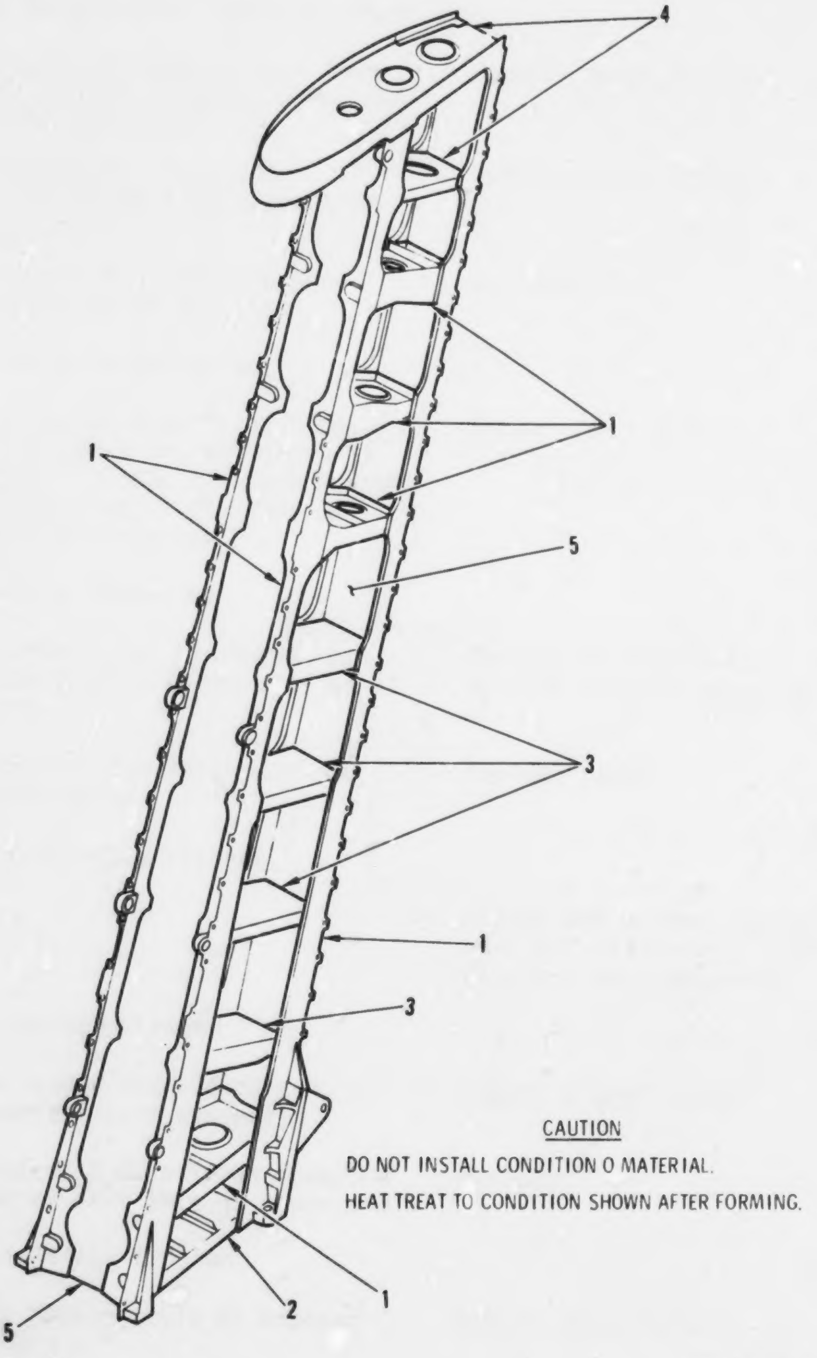
GO TO NEXT PAGE

2-4-2. CLASSIFICATION OF EMPENNAGE DAMAGE AND TYPES OF REPAIR (cont) 2-4-2

Category	Limits	Action
6. Kevlar/Epoxy Skin Cracks, Tears, or Punctures		
B	Cracks or tears: Less than 25 percent length of shortest skin dimension	Repair (para 2-7-1).
B	Punctures: less than 2.00 inches from supporting structure	Repair (para 2-7-1).
C	Exceeds B or hinders normal operation or function	Replace.
7. Kevlar/Epoxy Skin Delamination		
B	No deeper than three plies or 0.050-inch, whichever is less. (Treat limit-exceeding damages as crack, tear, or puncture repair.)	Repair (para 2-7-1).
8. Kevlar/Epoxy Skin Debonding		
C	Greater than six inches but less than 40 percent of panel area	Replace if possibility of danger to crew or helicopter exists.
	Greater than 40 percent of panel area	Replace panel.
9. Kevlar/Epoxy Fairings Debonding		
B		Rebond where ribs, gussets, baffles, stiffeners, seals, and doublers have debonded.
10. Kevlar/Epoxy Fairings Cracks		
B	No longer than 25 percent of shortest skin dimension	Repair (para 2-7-1).
C	Exceeds B or extends from one end of part through other end.	Replace.
11. Kevlar/Epoxy Fairings Erosion		
B	Any broken resin or exposed fibers	Repair (para 2-7-1).

END OF TASK

2-4-3. EMPENNAGE FRAME STRUCTURE



CAUTION

DO NOT INSTALL CONDITION O MATERIAL.

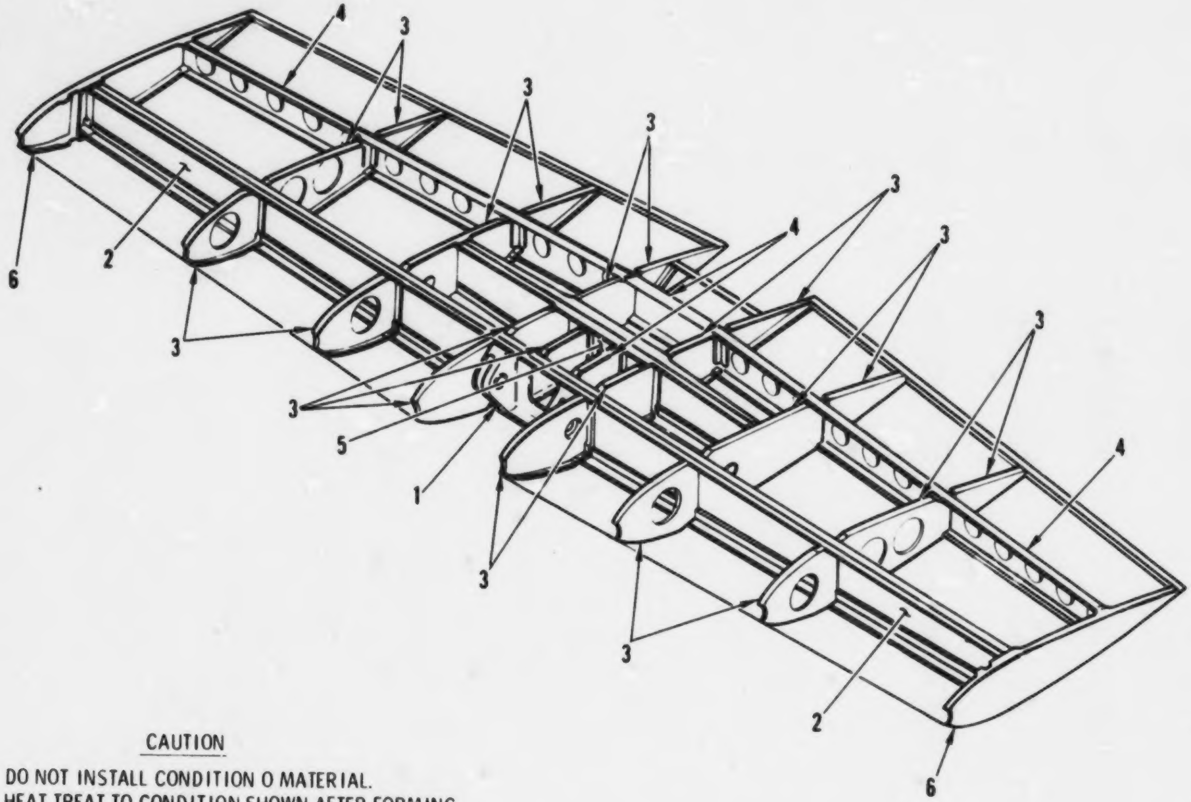
HEAT TREAT TO CONDITION SHOWN AFTER FORMING.

MM04-0011-A

Item	Material	Specification	Condition	Thickness (inches)
1	Forging			
2	2024 AL ALY	QQ-A-250/4	T42	0.063
3	2024 AL ALY	QQ-A-250/4	T42	0.050
4	2024 AL ALY	QQ-A-250/4	T42	0.040
5	2024 AL ALY	QQ-A-250/4	T3	0.050

best copy available

2-4-4. STABILATOR FRAME STRUCTURE



CAUTION

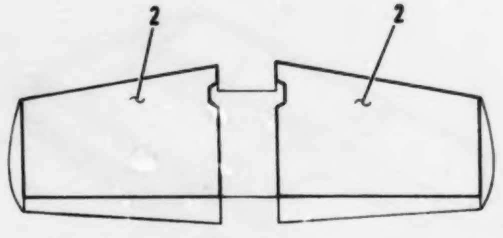
DO NOT INSTALL CONDITION O MATERIAL.
HEAT TREAT TO CONDITION SHOWN AFTER FORMING.

MM04-1155-1A

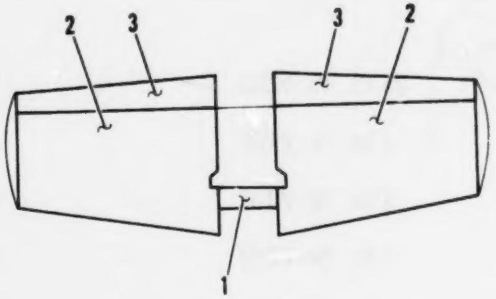
2-4-4. STABILATOR FRAME STRUCTURE (cont)

Item	Material	Specification	Condition	Thickness (inches)
1	Forging			
2	2024 AL ALY	QQ-A-250/4	T3	0.016
3	2024 AL ALY	QQ-A-250/4	T42	0.032
4	2024 AL ALY	QQ-A-250/4	T42	0.040
5	2024 AL ALY	QQ-A-250/4	T3	0.032
6	2024 AL CLAD	QQ-A-250/5	T42	0.032

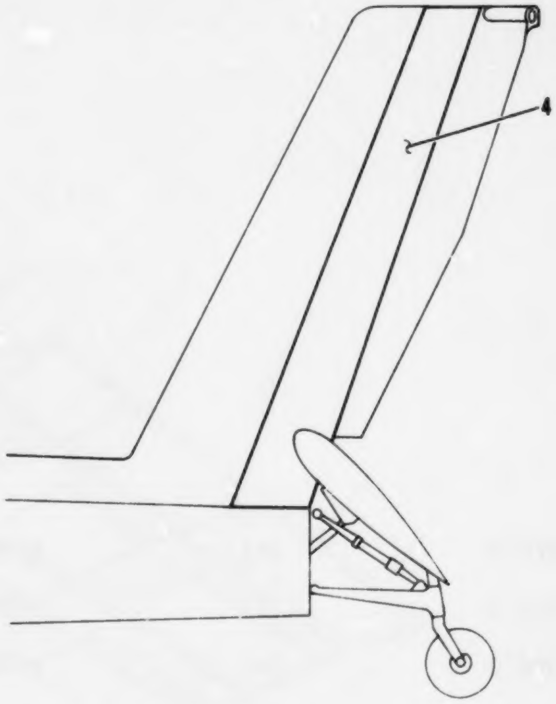
2-4-5. EMPENNAGE SKIN PLATES



TOP VIEW



BOTTOM VIEW



MM04-0016A

2-4-5. EMPENNAGE SKIN PLATES (cont)

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T3	0.025	9.0	12.0
2	2024 AL CLAD	QQ-A-250/5	T3	0.025	32.0	60.0
3	2024 AL CLAD	QQ-A-250/5	T3	0.025	28.0	60.0
4	2024 AL CLAD	QQ-A-250/5	T3	0.050	15.12	104.0

2-4-6. TAILBOOM CLOSEOUT COVER REMOVAL/INSTALLATION 2-4-6

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

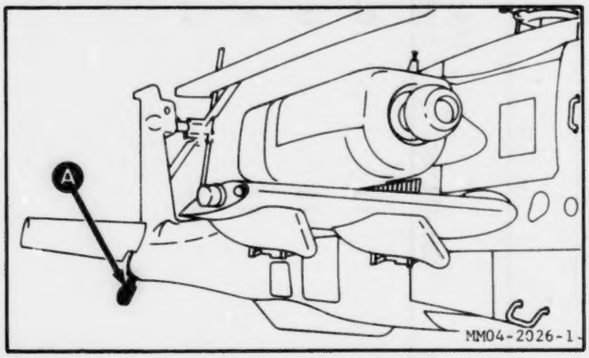
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor



GO TO NEXT PAGE

2-4-6. TAILBOOM CLOSEOUT COVER REMOVAL/INSTALLATION (cont) 2-4-6

A. REMOVAL

Remove tailboom closeout cover (1).

a. Remove 26 screws (2) and 26 washers (3).

b. Remove cover (1).

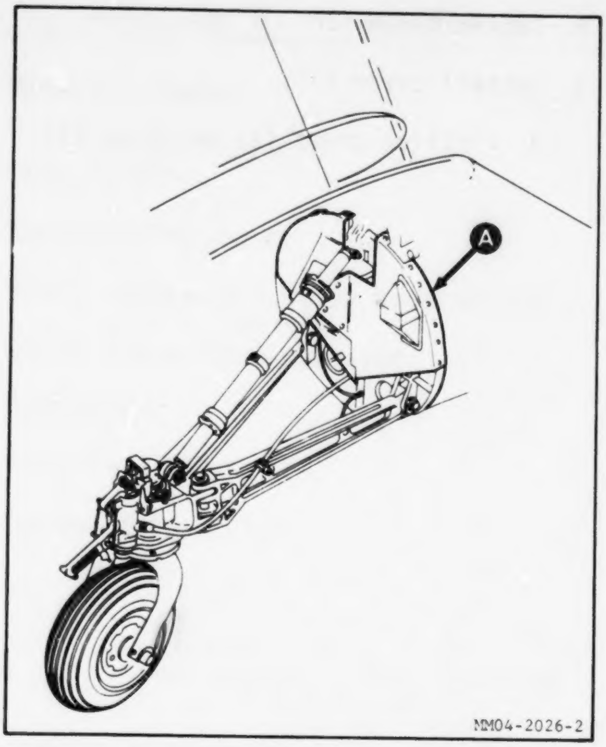
B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

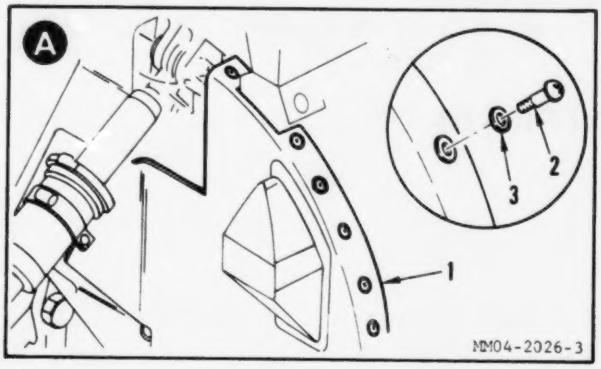
C. INSPECTION

1. Check cover for cracks. None allowed.

2. Check screws for damages and screw holes for stripped threads.



MM04-2026-2



MM04-2026-3

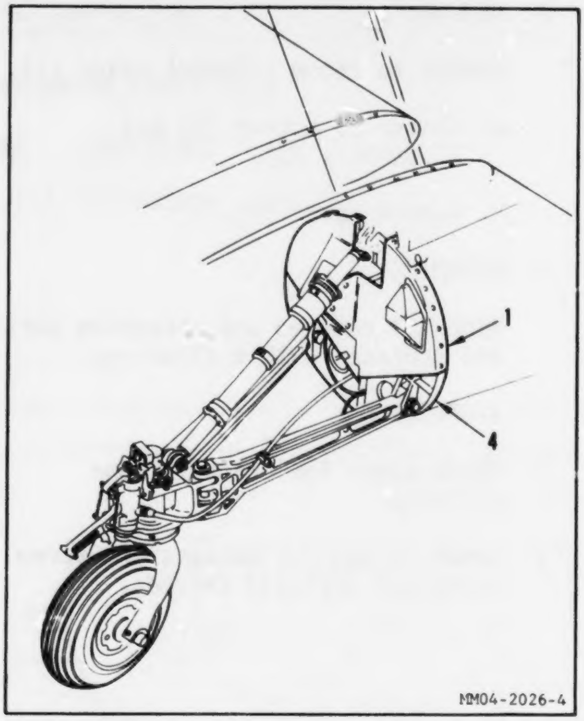
GO TO NEXT PAGE

2-4-6. TAILBOOM CLOSEOUT COVER REMOVAL/INSTALLATION (cont) 2-4-6

D. INSTALLATION

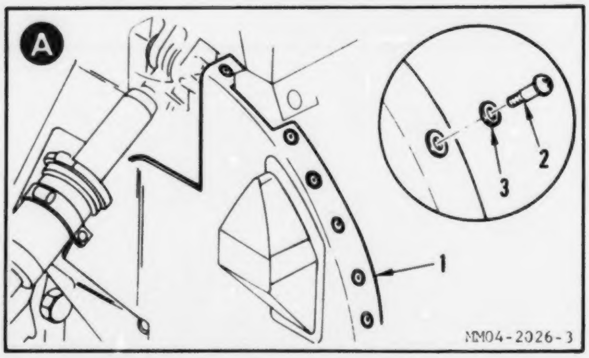
1. Install cover (1).

   a. Position cover (1) on frame (4).



   b. Install 26 washers (3) and 26 screws (2).

2. Inspect (TI).



END OF TASK

2-4-7. HORIZONTAL STABILATOR REMOVAL/INSTALLATION

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 3/8 Drive	5120-00-288-8865
Screwdriver, Offset, Crosstip	5120-00-256-9014
Socket, 1-1/2, 1/2 Drive	5120-00-277-1465
Crowfoot Attachment, 1-5/16, 1/2 Drive	5120-00-184-8409
Rigging Kit, Control System	1730-01-181-9270
Caliper, Micrometer	5120-00-540-2973
Gage, Thickness	5120-00-221-1999
Crowfoot Attachment, 1-1/2, 3/8 Drive	5120-00-184-8412

Materials/Parts:

	Cotter Pins (3)
(E5)	Grease

Personnel Required:

67R10	Attack Helicopter Repairer (5) Four to assist
66R30	Inspector/Supervisor

References:

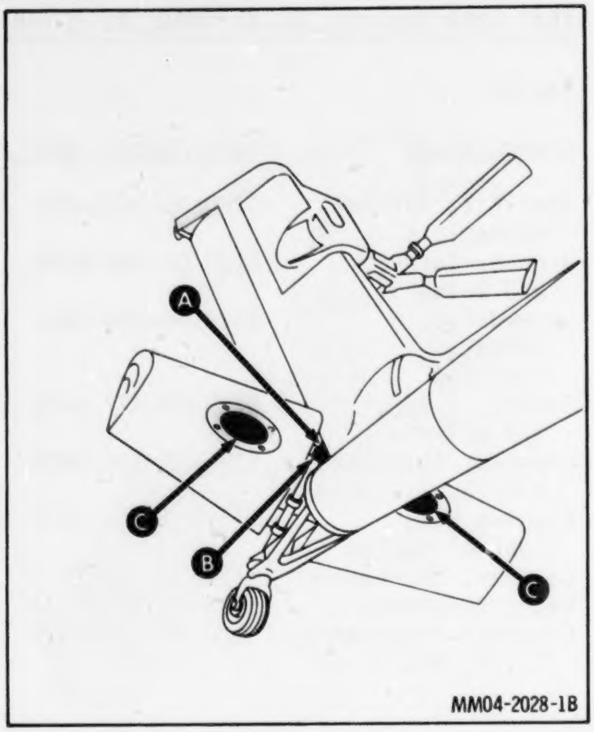
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors LS1, RS1, fairings L545 and R545 removed

GO TO NEXT PAGE

2-4-7. HORIZONTAL STABILATOR REMOVAL/INSTALLATION (cont) 2-4-7

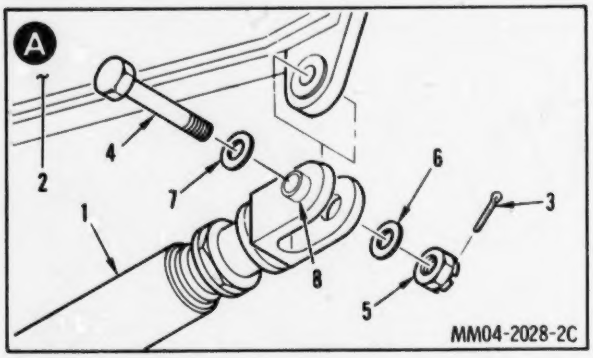


A. REMOVAL

NOTE

Four persons support stabilator during removal.

1. **Disconnect actuator (1) from stabilator (2).**
   a. Remove cotter pin (3).
   b. Hold bolt (4).
   c. Remove nut (5) and washer (6) from bolt (4).
   d. Remove bolt (4), washer (7), and bushing (8).



GO TO NEXT PAGE

2-4-7. HORIZONTAL STABILATOR REMOVAL/INSTALLATION (cont) 2-4-7

2. **Remove transducer (17).**

   a. Remove two clamps (10) and tie straps (11).

   b. Remove two nuts (12), washers (13), and screws (14).

   c. Detach connector J1076 (15) from connector P1076 (16).

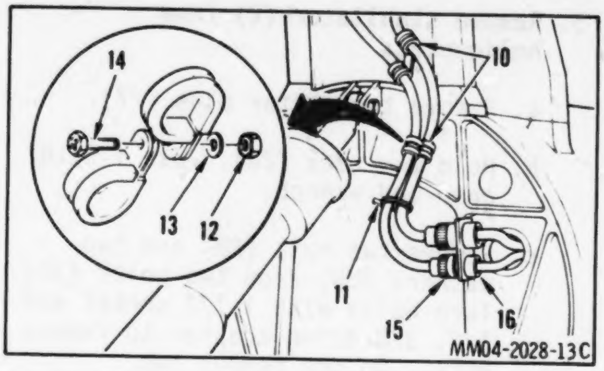
   d. Remove two screws (18) and washers (19) from transducer bracket (20) and vertical stabilizer (21). Use offset screwdriver.

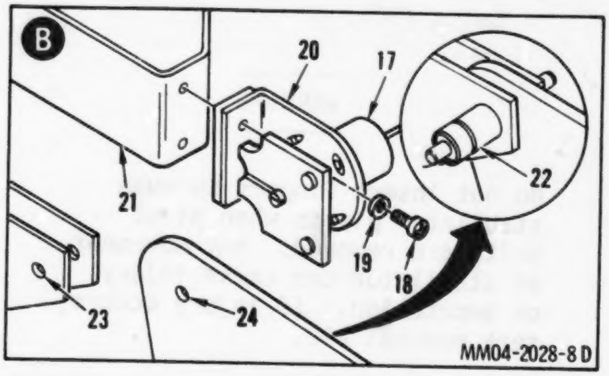
3. **Set stabilator (2) position.** Insert rig pin (22) through rig pin holes (23) and (24).

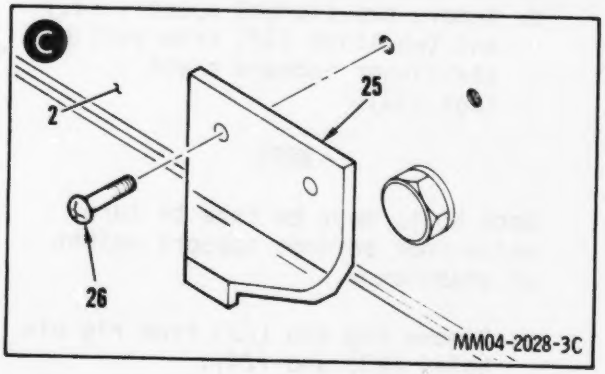
4. **Remove two retainers (25) from inside stabilator (2).**

   a. Remove two screws (26) from each retainer (25).

   b. Remove retainers (25) from stabilator (2).

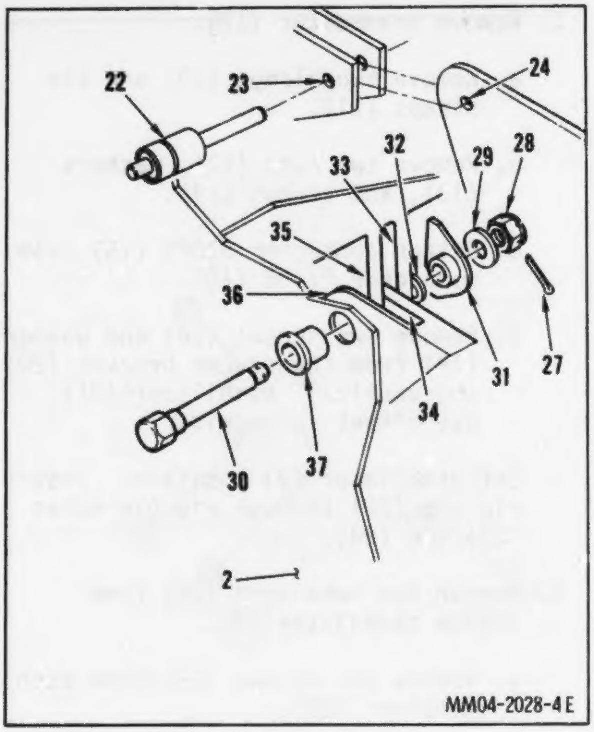






GO TO NEXT PAGE

2-4-7. HORIZONTAL STABILATOR REMOVAL/INSTALLATION (cont) 2-4-7



5. **Remove stabilator (2) from helicopter.**

   a. Remove two cotter pins (27).

   b. Hold two nuts (28). Use 1-5/16 open-end wrench.

   c. Remove two nuts (28) and two washers (29) from two bolts (30). Turn bolts with 1-1/2 socket and 1/2, 3/8 drive adapter to remove nuts. Do not remove two bolts (30).

WARNING

Do not insert fingers through stabilator pivots when pivot bolts are removed. Any movement of stabilator can cause injury or amputation. If injury occurs, seek medical aid.

   d. Remove two flanged spacers (31) and two shims (32) from vertical stabilator inboard pivot lugs (33).

NOTE

Both bolts must be free to turn while four persons support weight of stabilator.

   e. Remove rig pin (22) from rig pin holes (23) and (24).

   f. Remove two bolts (30) from pivot lugs (33), (34), (35), and (36).

   g. Slide stabilator (2) aft from helicopter.

   h. Remove two sleeve spacers (37) from lugs (35).

GO TO NEXT PAGE

B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. Check pivot lugs for damage or distortion (para 2-4-1).
2. Check pivot lugs for corrosion (para 1-5-38).
3. Check bolts and nuts for stripped threads.
4. Check shoulder bolts, spacers, and pivot lugs for looseness. Slide spacers into lugs. Insert bolts to check.
5. Check shoulder bolts and pivot lugs for roughness. Insert shoulder bolts through lugs to check. Spacer must slide smoothly on bolt.
6. Bushings are considered within limits with 70 percent or more of lining intact. The missing 30 percent may not be in one continuous area.

D. INSTALLATION

NOTE

Four persons must support stabilator during installation.

GO TO NEXT PAGE

1. Install stabilator (2) on helicopter. Torque two nuts (28) to 225 INCH-POUNDS.

   a. Install stabilator sleeve spacers (37) onto bolt (30).

   b. Aline stabilator pivot lugs (34) and (36) with vertical stabilator lugs (33) and (35).

   NOTE

   Hold stabilator position until pivot hardware is installed (step g). Adjust support of stabilator to allow no-load installation of pivot bolts.

   c. Set slots in bearings (38) at 6 and 12 o'clock. Turn flanged spacers (31) to aline keys in spacers with slots in bearings (38).

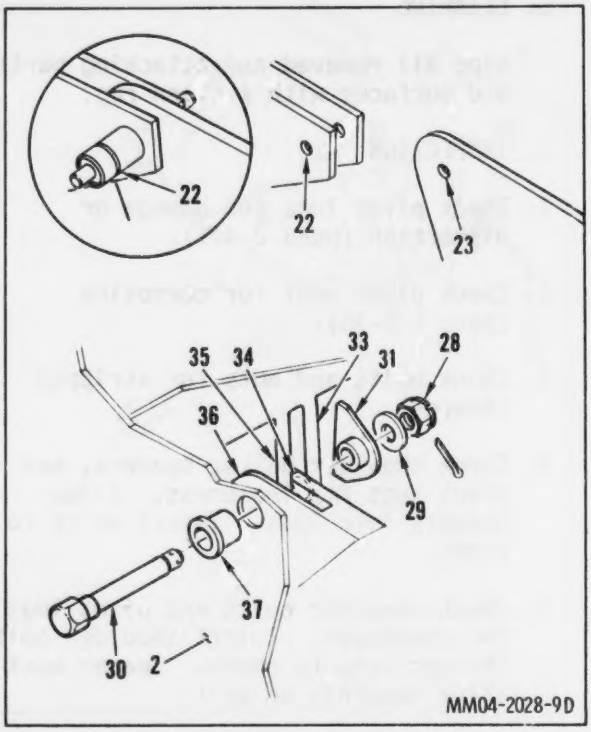
   d. Lubricate two bolts (30). Use grease (E105).

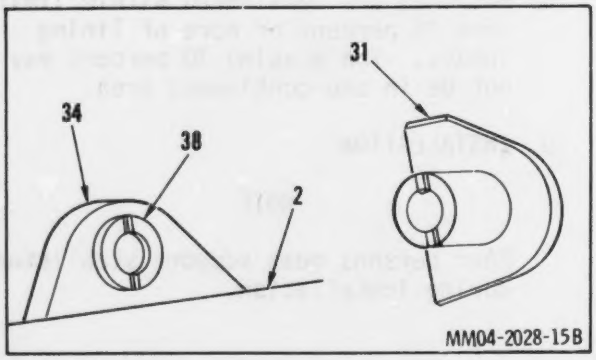
   NOTE

   Stabilator support must be adjusted to allow no-load installation of pivot bolts.

   e. Insert two bolts (30) from inside stabilator (2) through spacers (37) and (31), bearings (38), and pivot lugs (33), (34), (35), and (36).

   f. Lift stabilator (2) to aline rig pin holes (23) and (24). Insert rig pin through alined holes.





   g. Install two washers (29) and two nuts (28) on two bolts (30).

   h. Hold two nuts (28). Use 1-5/16 crowfoot.

   i. Torque two bolts (30) to 225 INCH-POUNDS. Use 1-1/2 crowfoot.

GO TO NEXT PAGE

2-4-7. HORIZONTAL STABILATOR REMOVAL/INSTALLATION (cont) 2-4-7

j. Laterally center stabilator (2) so that gaps between vertical stabilizer outboard pivot lugs (35) and stabilator inboard lugs (34) are equal within 0.010-inch on both sides of helicopter. Use micrometer caliper.

k. Measure gaps under flanges of two spacers (31) and faces of mating angles (39). Use thickness gage.

l. Remove two nuts (28), washers (29), and spacers (31). (Refer to step 5.)

m. Measure thickness of two shims (32). Use micrometer caliper. Required shim thickness is 0.001 to 0.003-inch less than measured gap (step k). Peel shim leaves, or replace shims and peel off layers to meet gap requirement, if needed.

n. Install two shims (33), spacers (31), washers (29), and nuts (28). Turn spacers (31) to aline keys in spacers (32) with slots in bearings (38).

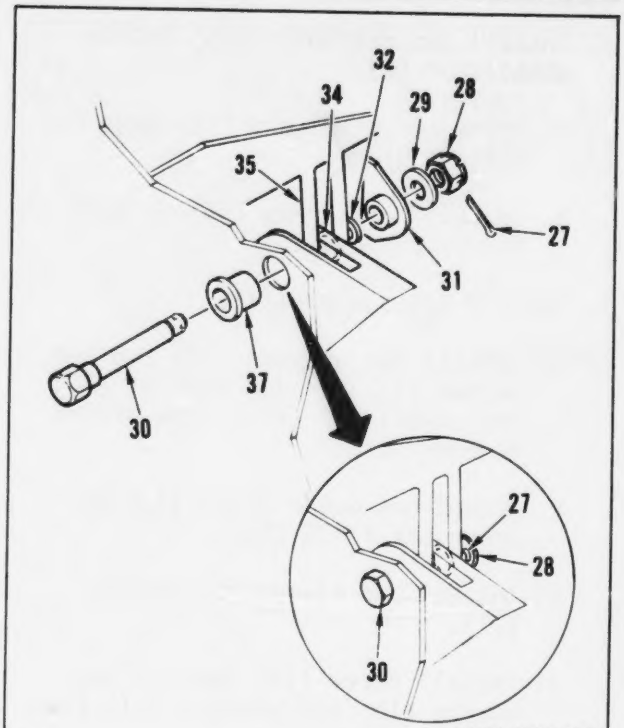
3. **Torque two nuts (28) to 300 to 400 INCH-POUNDS and aline cotter pin holes.**

   a. Hold two bolts (29). Use 1-1/2 socket and 1/2, 3/8 drive adapter.

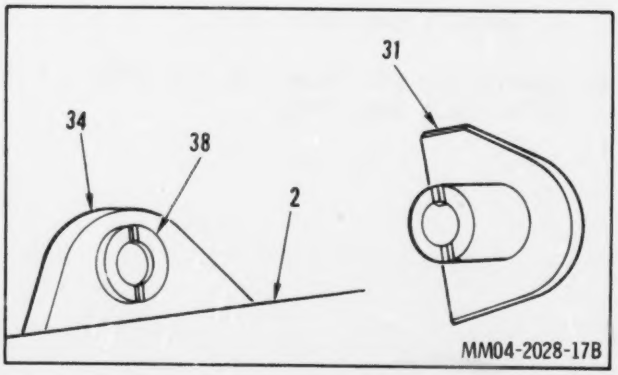
   b. Torque two nuts (28) to **300 INCH-POUNDS.** Use 1-5/16 crowfoot and 1/2, 3/8 drive adapter.

   c. If cotter pin holes are not alined, increase torque to aline. Do not exceed **400 INCH-POUNDS.**

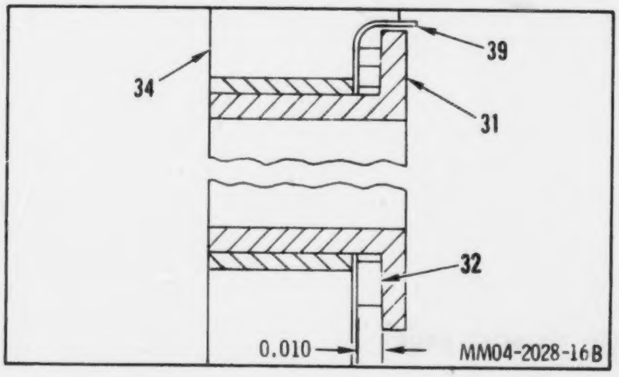
   d. Install two new cotter pins (27).



MM04-2028-10D



MM04-2028-17B



MM04-2028-16B

GO TO NEXT PAGE

2-4-7. HORIZONTAL STABILATOR REMOVAL/INSTALLATION (cont) 2-4-7

4. **Install two retainers (25) inside stabilator (2).**

   a. Aline two retainers (25) over two bolts (30).

   b. Install two screws (26) in each of two retainers (25).

5. **Install transducer (17).**

   a. Install two washers (19) and two screws (18) through bracket (20) and stabilizer (21). Use offset screwdriver.

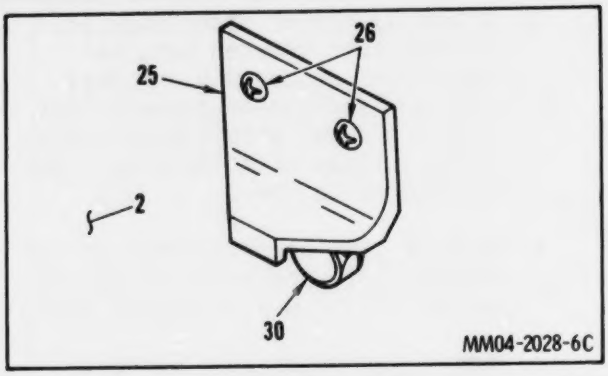
   b. Attach connector J1076 (15) to connector P1076 (16).

   c. Install two clamps tie straps (11).

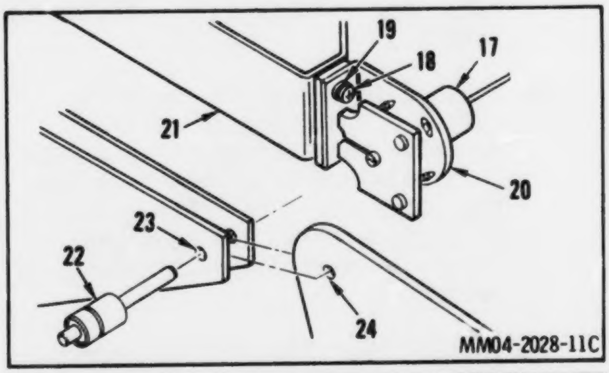
   d. Install screw (14) through two clamps (10) and washers (13) (two places).

   e. Install two nuts (12).

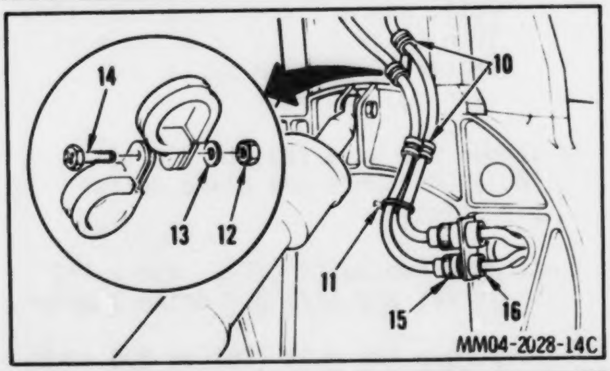
6. **Remove rig pin from rig pin (22) holes (23) and (24).**



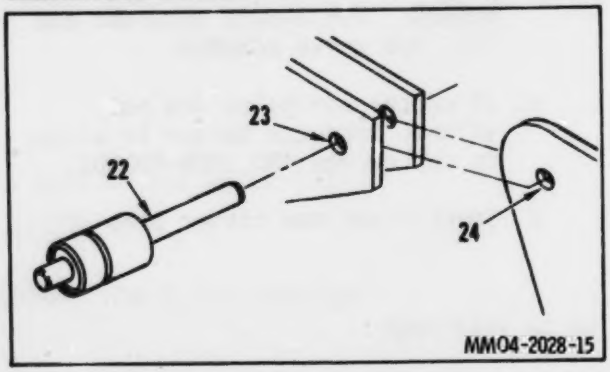
MM04-2028-6C



MM04-2028-11C

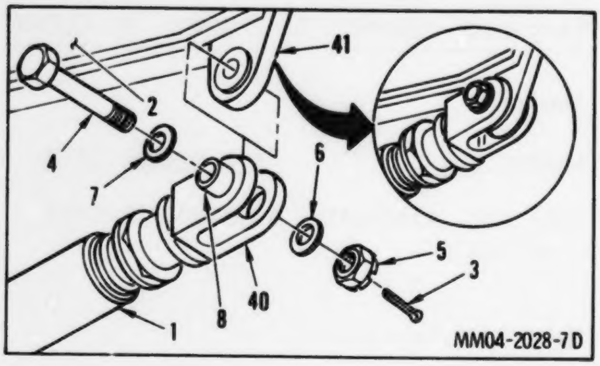


MM04-2028-14C



MM04-2028-15

GO TO NEXT PAGE



7. **Connect actuator (1) to stabilator (2).**

   a. Aline actuator clevis (40) with stabilator fitting (41).

   b. Insert bushing (8) through clevis (40) and fitting (41).

   c. Install bolt (4) through washer (7) and bushing (8).

   d. Install washer (6) and nut (5) on bolt (4).

   e. Hold bolt (4).

   f. Tighten nut (5) 1/8-turn.

   g. If cotter pin hole is not alined, tighten nut to aline. Do not exceed 1/4-turn.

   h. Install new cotter pin (3).

8. **Inspect (TI).**

9. **Secure access doors LS1, RS1; and fairings L545 and R545** (para 2-2-2).

10. **Perform flight controls operational check** (TM 55-1520-238-T).

END OF TASK

2-4-8. STEP/HANDHOLD REMOVAL/INSTALLATION 2-4-8

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

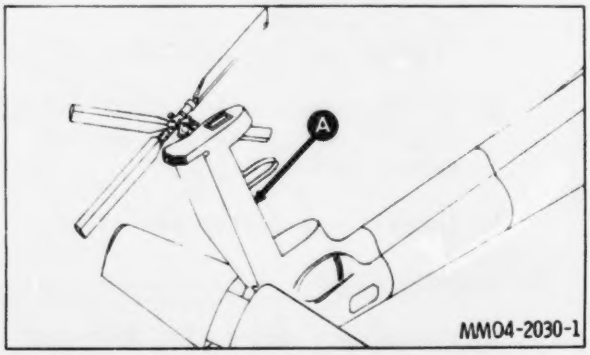
(E46) Compound, Sealing

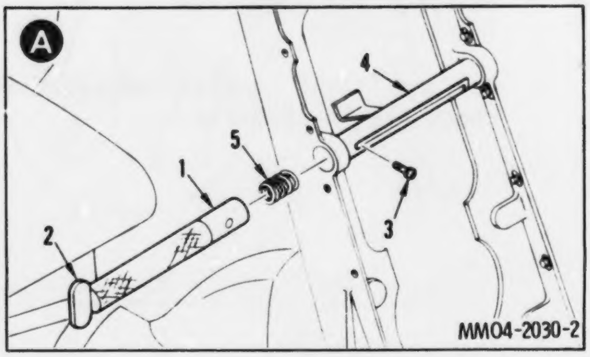
Personnel Required:

67R10 Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access fairing L510, L530, and L540 opened





A. REMOVAL

Remove step/handhold tube (1) from empennage.

a. Rotate tube key (2) counterclockwise to unlock.

b. Remove screw (3) from tube (1).

c. Remove tube (1) from fixed tube (4).

d. Remove spring (5) from fixed tube (4).

GO TO NEXT PAGE

B. CLEANING

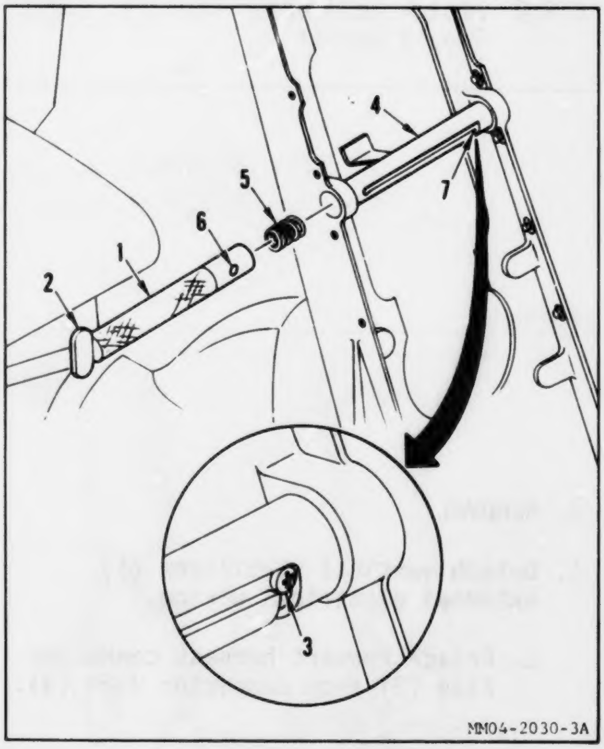
Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. Check step/handhold tubes for stripped threads, bends, and excessive wear.
2. Check step/handhold tubes for corrosion (para 2-4-2).

D. INSTALLATION

1. Install tube (1).
   a. Install spring (5) into fixed tube (4).
   b. Insert tube (1) into fixed tube (4).
   c. Coat screw (3) with sealing compound. Use sealing compound (E46)
   d. Aline screw (3) with slot (7) at corner in fixed tube (4).
   e. Install screw (3) into tube (1). Tighten to ensure freedom of handle.
   f. Lock tube (1) in fixed tube (4). Push on tube (1). Turn key (2) clockwise to lock.
2. Secure access fairing L510, L530, and L540 (para 2-2-2).



END OF TASK

2-4-9. VERTICAL STABILIZER REMOVAL 2-4-9

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

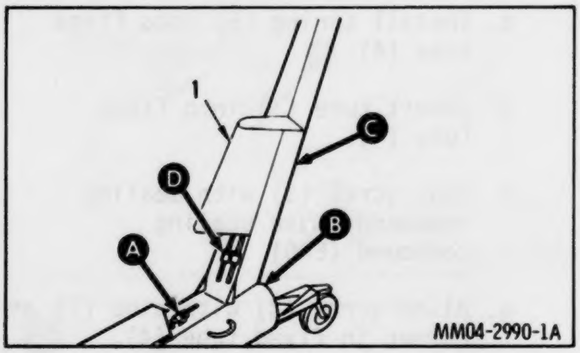
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Sling, Vertical Stabilizer	1740-01-220-8476

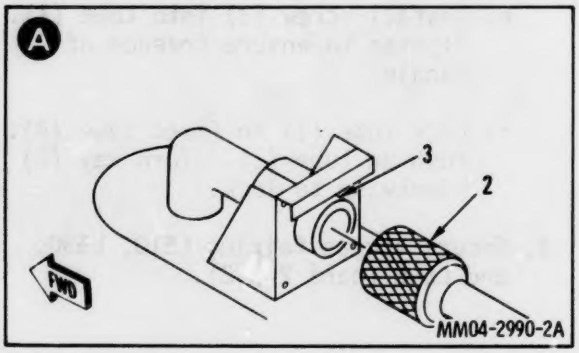
Personnel Required:

67R10 Attack Helicopter Repairer (3)
Two to assist

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Fairings R510, L510, L530, L540, R545, L545, and L546 removed
6-5-7	Intermediate gearbox removed
6-6-6	Tail rotor gearbox removed
2-4-7	Horizontal stabilator removed
6-2-14	No. 6 drive shaft removed
2-4-13	Vertical stabilizer tip removed
2-4-14	Trailing edge removed





A. REMOVAL

1. **Detach vertical stabilizer (1) external electrical wiring.**

   a. Detach forward harness connector P124 (2) from connector J124 (3).

GO TO NEXT PAGE

2-4-9. VERTICAL STABILIZER REMOVAL (cont) 2-4-9

b. Detach connector P756 (4) from connector J756 (5).

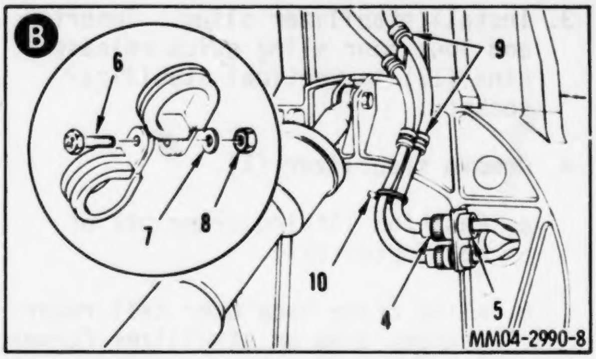
c. Remove two nuts (8), two washers (7), and two screws (6).

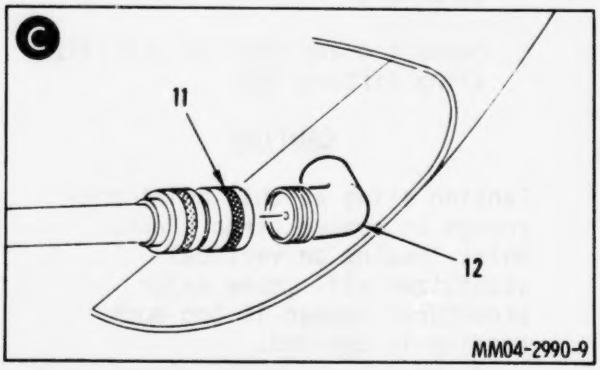
d. Remove clamps (9).

e. Remove tie straps (10).

f. Remove lockwire (E34).

g. Detach connector P329 (11) from antenna connector E317 (12).

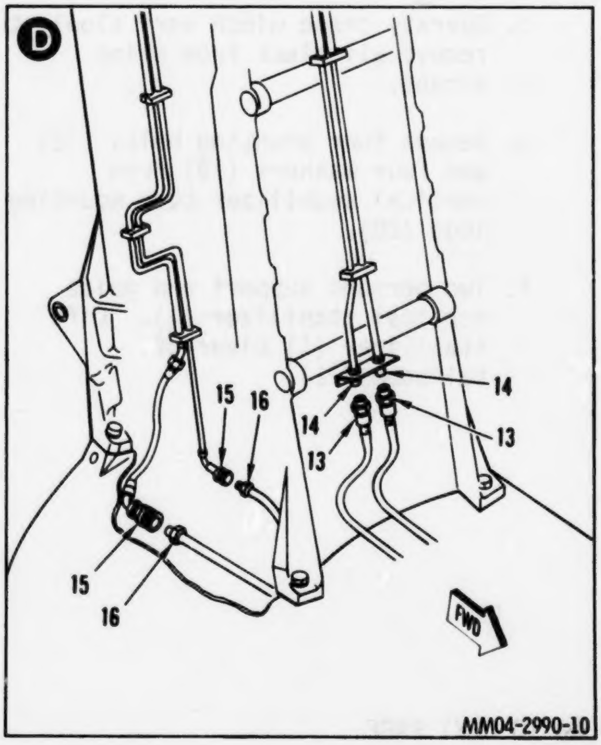




2. **Disconnect vertical stabilizer external hydraulic lines.**

a. Disconnect hydraulic coupling halves (13) from hydraulic coupling halves (14).

b. Disconnect hydraulic coupling halves (15) from hydraulic coupling halves (16).



GO TO NEXT PAGE

2-4-9. VERTICAL STABILIZER REMOVAL (cont) 2-4-9

3. **Install stabilizer sling.** Insert and lock four sling quick-release pins (17) in vertical stabilizer sockets.

4. **Remove stabilizer (1).**

   a. Position lifting crane aft of helicopter tail.

   b. Aline crane hook over tail rotor gearbox area on stabilizer forward structure.

   c. Connect crane hook to stabilizer sling lifting eye.

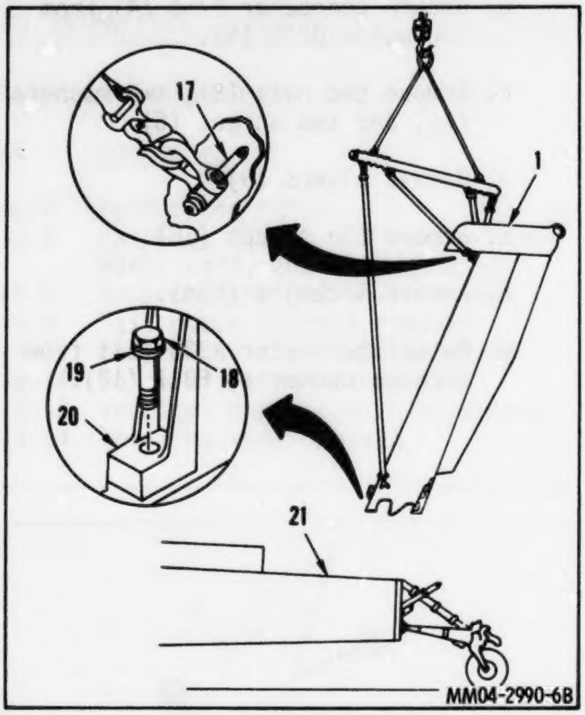
CAUTION

Tension sling at this point only enough to remove strap slack. Hoist-loading on vertical stabilizer will cause major structural damage if too much tension is applied.

   d. Operate crane winch very slowly to remove all slack from sling straps.

   e. Remove four mounting bolts (18) and four washers (19) from vertical stabilizer base mounting lugs (20).

   f. Two persons support and guide vertical stabilizer (1). Lift stabilizer (1) clear of tailboom (21).



GO TO NEXT PAGE

B. CLEANING

1. Wipe hydraulic quick-disconnect fittings with a clean rag.
2. Clean sealing compound from vertical stabilizer and tailboom (para 1-5-36).
3. Clean mounting lugs and lug mating surfaces on tailboom (para 1-5-36).
4. Check barrel nut for cracks, warpage, or stripped threads. None allowed.

C. INSPECTION

1. Check electrical connectors for bent or broken pins, cracked or burned insulation, and dented or deformed shells.
2. Check quick-disconnect fittings for stripped threads. None allowed.
3. Check mounting lugs for cracks or deformation. None allowed.

END OF TASK

2-4-10. VERTICAL STABILIZER INSTALLATION 2-4-10

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Sling, Vertical Stabilizer	1740-01-220-8476
Wrench, Torque, 1/2 Drive	5120-00-270-3121
Brush, Paint	8020-00-297-6657
Ohmmeter, Digital	6625-01-125-3471

Materials/Parts:

(E34) Lockwire

Personnel Required:

67R10	Attack Helicopter Repairer (3) Two to assist
66R30	Inspector/Supervisor

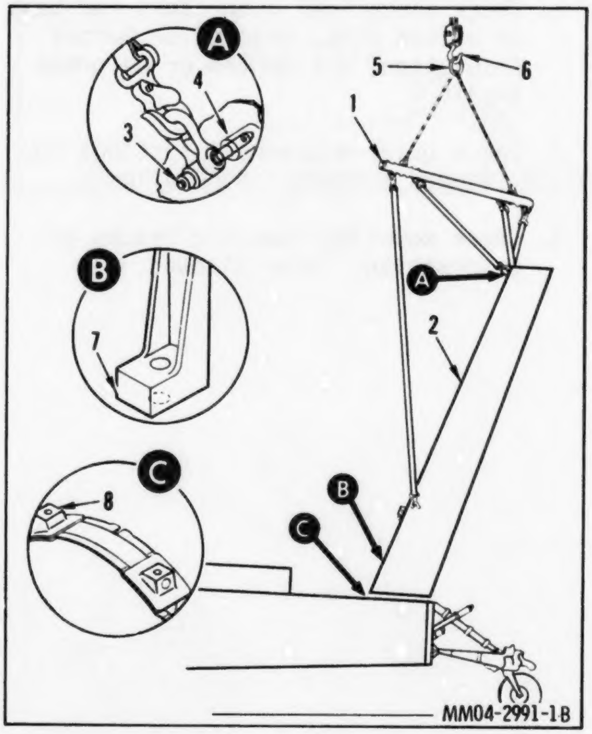
References:

TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. **Install stabilizer sling (1) on vertical stabilizer (2).**
   a. Insert and lock four sling quick-release pins (3) in stabilizer pin sockets (4).
   b. Install stabilizer sling lifting eye (5) on crane hook (6).
2. **Strip bottom of vertical stabilizer pads (7) and top of tailboom pads (8) to bare metal** (TM 55-1500-345-23).
3. **Chemically treat vertical stabilizer pads (7) and top of tailboom pads (8)** (TM 55-1500-345-23).
4. **Bond check stabilizer pads (7) and tailboom pads (8)** (TM 55-1500-323-24). Bond resistance not to exceed **0.005 MILLIOHMS.**



GO TO NEXT PAGE

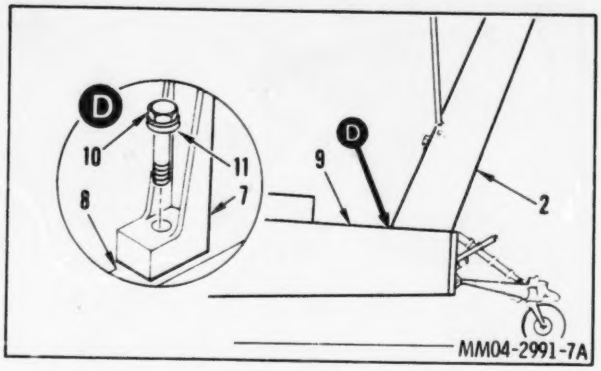
2-4-10. VERTICAL STABILIZER INSTALLATION (cont) 2-4-10

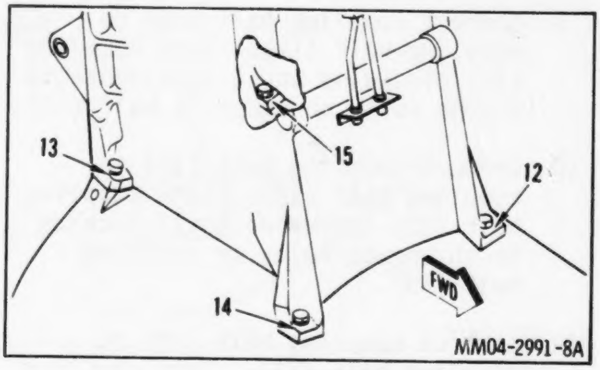
5. **Install vertical stabilizer (2) on tailboom (9).** Torque four bolts (10) to **900 INCH-POUNDS.**

   a. Aline four stabilizer pads (7) over tailboom pads (8). Carefully lower stabilizer (2) on tailboom (9).

   b. Install four bolts (10) through four washers (11) and stabilizer pads (7) into tailboom pads (8).

   c. Torque four bolts (10) to **900 INCH-POUNDS.**





6. **Bond check between left forward stabilizer lug (12) and right aft tailboom lug (13)** (TM 55-1500-323-24). Bond resistance not to exceed **0.005 MILLIOHMS.**

7. **Bond check between right forward stabilizer lug (14) and left aft tailboom lug (15)** (TM 55-1500-323-24). Bond resistance not to exceed **0.005 MILLIOHMS.**

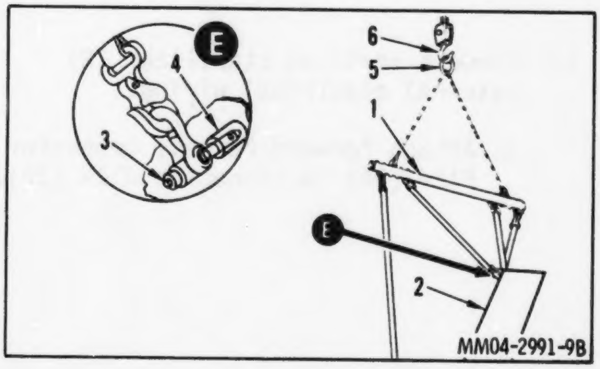
NOTE

If bond check exceeds **0.005 MILLIOHMS,** remove vertical stabilizer and repeat steps 1 thru 7.

8. **Remove stabilizer sling (1) from vertical stabilizer (2).**

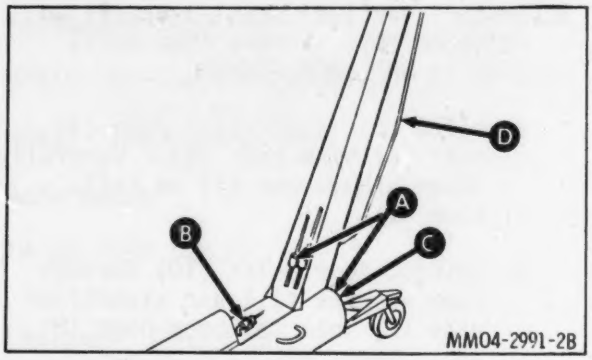
   a. Unlock and remove four sling quick-release pins (3) from stabilizer pin sockets (4).

   b. Remove stabilizer sling lifting eye (5) from crane hook (6).



GO TO NEXT PAGE

2-4-10. VERTICAL STABILIZER INSTALLATION (cont) 2-4-10

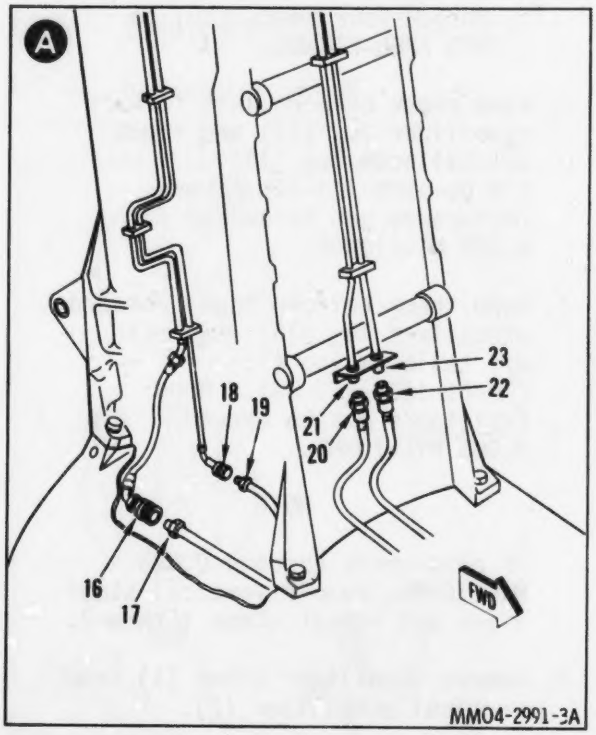


9. **Connect coupling half (16) to coupling half (17).** Turn coupling (16) clockwise until locking teeth engage fully on coupling half (17).

10. **Connect coupling half (18) to coupling half (19).** Turn coupling half (18) clockwise until locking teeth engage fully on coupling half (19).

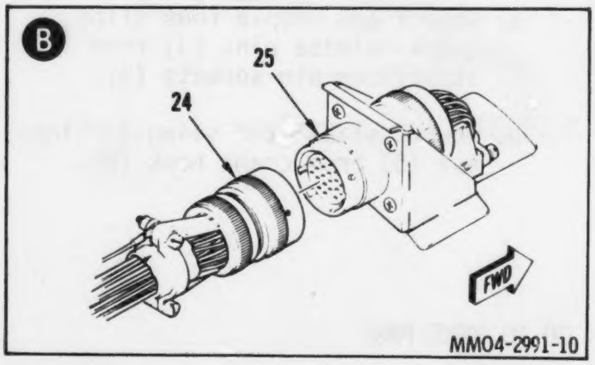
11. **Connect coupling half (20) to coupling half (21).** Turn coupling half (20) clockwise until locking teeth engage fully on coupling half (21).

12. **Connect coupling half (22) to coupling half (23).** Turn coupling half (22) clockwise until locking teeth engage fully on coupling half (23).



13. **Connect vertical stabilizer (2) external electrical wiring.**

    a. Attach forward harness connector P124 (24) to connector J124 (25).



GO TO NEXT PAGE

2-4-10. VERTICAL STABILIZER INSTALLATION (cont) 2-4-10

b. Install two clamps (26).

c. Install screw (27), through two clamps (26), and washer (28) (two places).

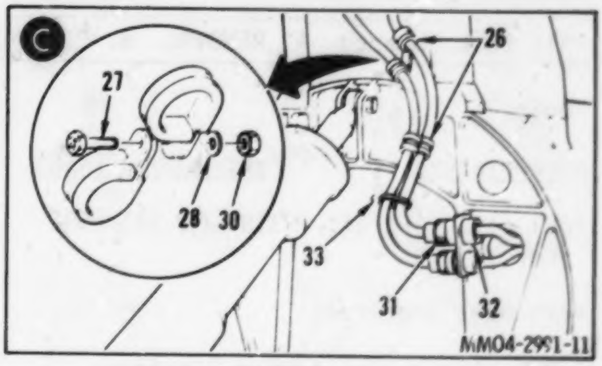
d. Install two nuts (30).

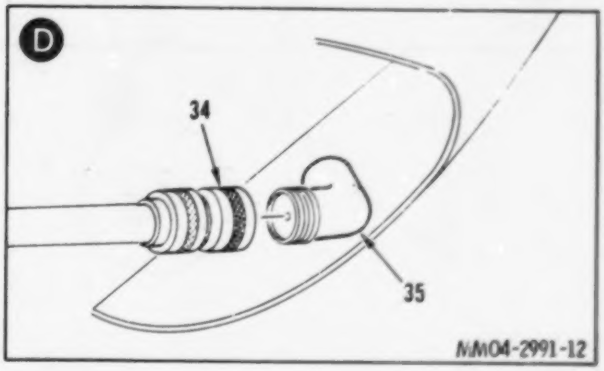
e. Attach connector P756 (31) to connector J756 (32).

f. Install tie straps (33).

g. Attach connector P329 (34) to antenna connector E317 (35).

h. Install lockwire (E34).





14. **Inspect (TI).**

15. **Install No. 6 drive shaft** (para 6-2-14).

16. **Install horizontal stabilator** (para 2-4-7).

17. **Install tail rotor gearbox** (para 6-6-6).

18. **Install intermediate gearbox** (para 6-5-7).

19. **Install trailing edge** (para 2-4-14).

20. **Install vertical stabilizer tip** (para 2-4-13).

21. **Install panels L510, R510, L530, L540, L545, R545 and L546** (para 2-2-2).

END OF TASK

2-4-11. VERTICAL STABILIZER FAIRINGS R510 AND L510 REMOVAL/INSTALLATION 2-4-11

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

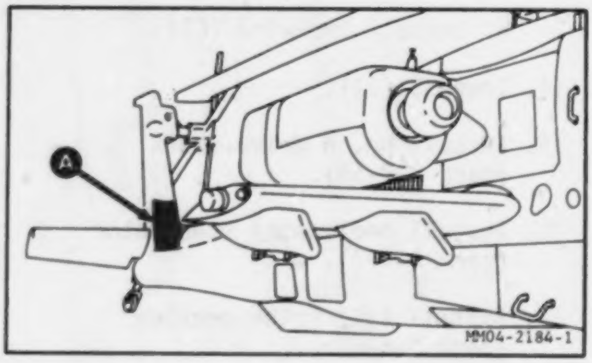
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



GO TO NEXT PAGE

2-4-11. VERTICAL STABILIZER FAIRINGS R510 AND L510 REMOVAL/INSTALLATION (cont) 2-4-11

A. REMOVAL

1. **Remove vertical stabilator fairing R510 (1).** Unfasten 34 turnlock fasteners (2).

2. **Remove vertical stabilator fairing L510 (3).** Unfasten 18 turnlock fasteners (4).

B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

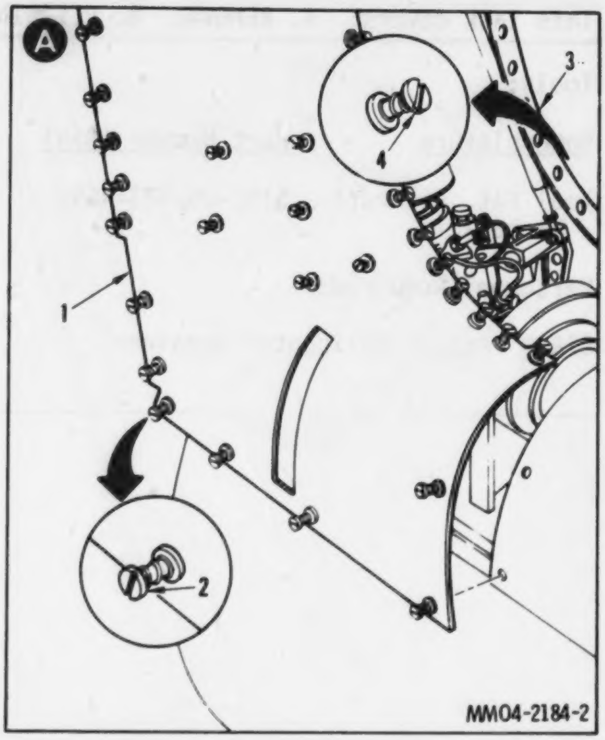
1. **Check turnlock fasteners for damage.**

2. **Check vertical stabilizer fairing R510 and L510 for corrosion (para 2-4-2).**

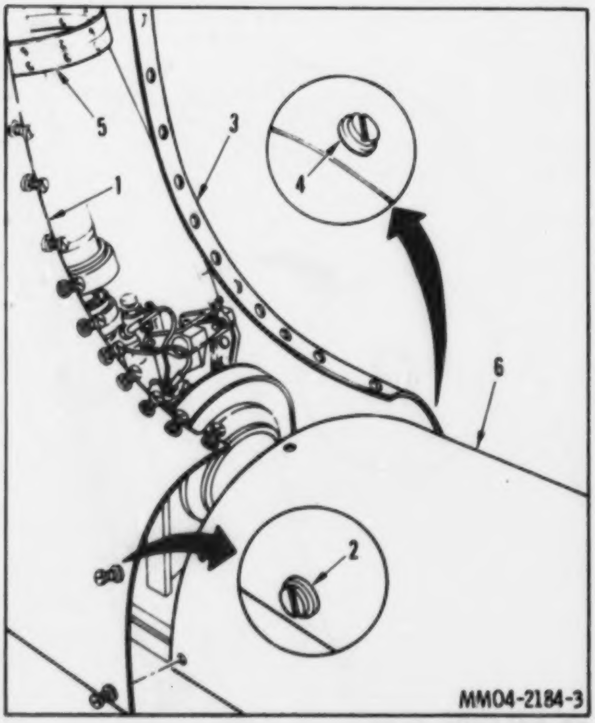
D. INSTALLATION

1. **Install fairing L510 (3).**
   a. Position fairing L510 (3) on fairing supports (5) and (6).
   b. Fasten 18 turnlock fasteners (4).

2. **Install vertical stabilizer fairing R510 (1).**
   a. Position fairing R510 (1) on fairing supports (5) and (6).
   b. Fasten 34 turnlock fasteners (2).



MM04-2184-2



MM04-2184-3

END OF TASK

2-4-12. VERTICAL STABILIZER FAIRING L530 REMOVAL/INSTALLATION 2-4-12

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

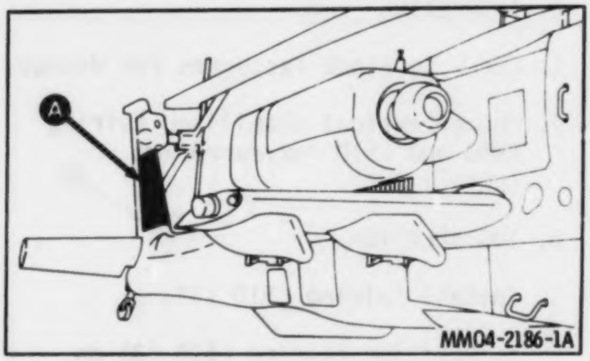
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed



GO TO NEXT PAGE

2-4-12. VERTICAL STABILIZER FAIRING L530 REMOVAL/INSTALLATION (cont) 2-4-12

A. REMOVAL

Remove vertical stabilizer fairing L530 (1).

a. Remove 48 screws (2) and 48 washers (3).

b. Remove fairing (1).

B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. Check vertical stabilizer L530 fairing for cracks (para 2-4-2).
2. Check fairing for corrosion (para 2-4-2).
3. Check screws for stripped threads.

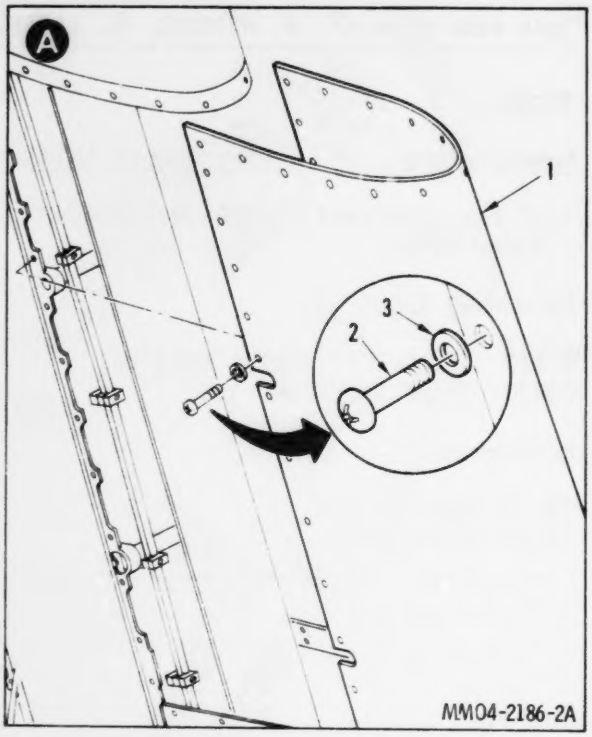
D. INSTALLATION

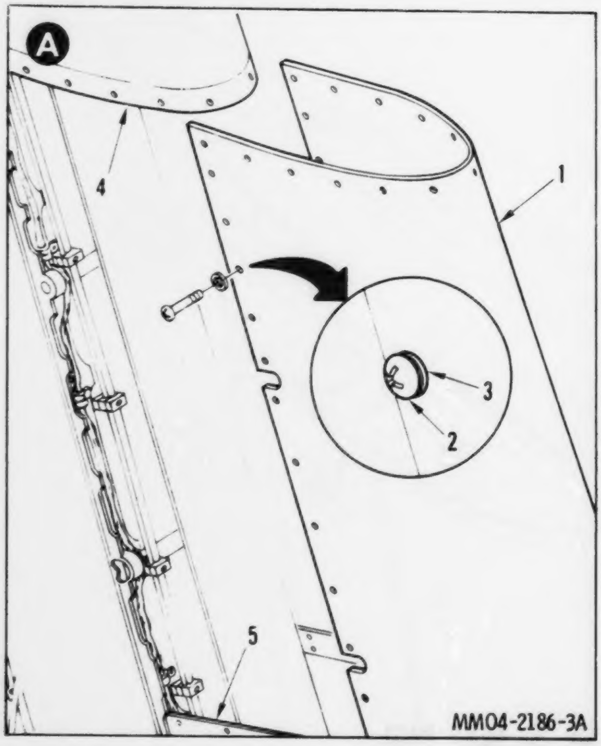
Install vertical stabilizer fairing L530 (1).

a. Position fairing L530 (1) on fairing supports (4) and (5).

b. Install 48 washers (3) and 48 screws (2).

END OF TASK





2-4-13. VERTICAL STABILIZER TIP T545 REMOVAL/INSTALLATION 2-4-13

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

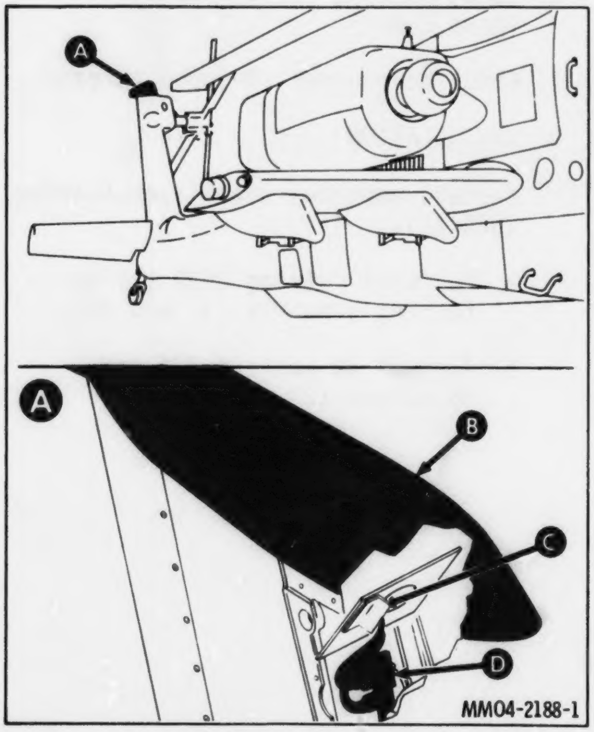
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 11-1520-238-23
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
9-6-8	Formation lights removed
9-6-6	Navigation light removed
TM 11-1520-238-23	Spiral antennas removed. Radar warning receiver removed

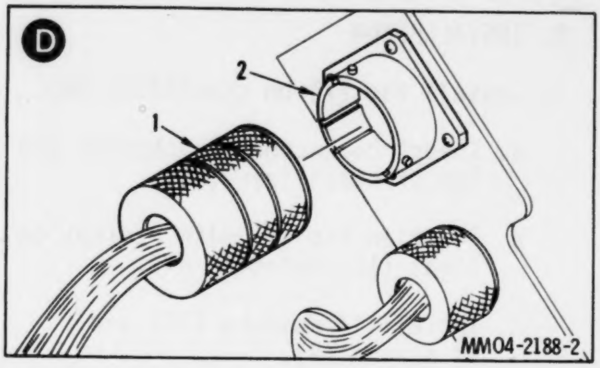


GO TO NEXT PAGE

2-4-13. VERTICAL STABILIZER TIP T545 REMOVAL/INSTALLATION (cont) 2-4-13

A. REMOVAL

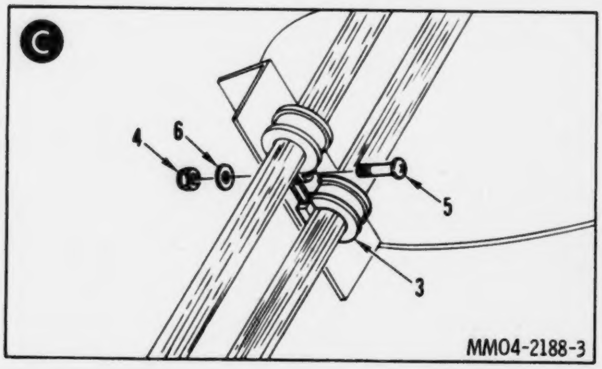
1. **Detach connector (1) from receptacle (2).**



2. **Remove clamp (3).**

   a. Hold nut (4).

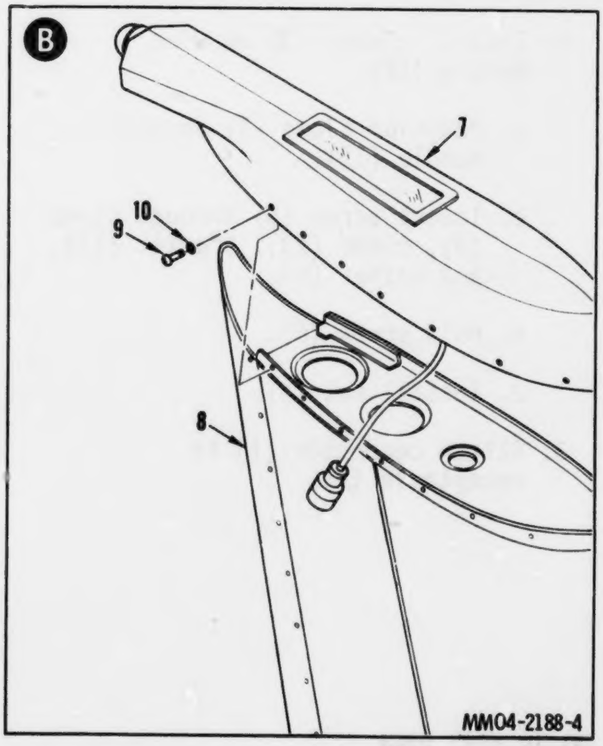
   b. Remove screw (5) and washer (6).



3. **Remove tip (7) from stabilizer (8).**

   a. Remove 14 screws (9) and 14 washers (10).

   b. Lift tip (7) from stabilizer (8).



B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

1. **Check tip for cracks (para 2-4-2).**
2. **Check screws for stripped threads.**
3. **Check connector and receptacle for damage (para 2-4-1).**

GO TO NEXT PAGE

2-4-13. VERTICAL STABILIZER TIP T545 REMOVAL/INSTALLATION (cont) 2-4-13

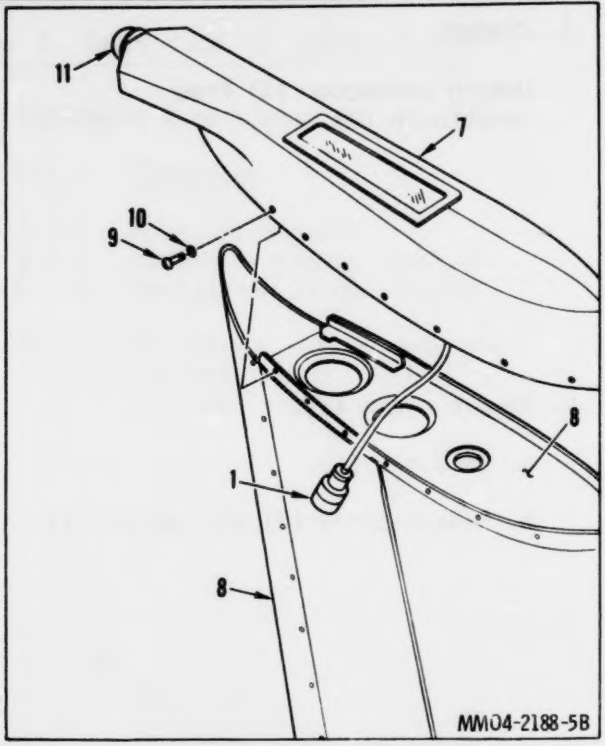
D. INSTALLATION

1. Install tip (7) on stabilizer (8).

   a. Insert connector (1) through the top of stabilizer (8).

   b. Position tip (7) with navigation light (11) pointing aft.

   c. Install 14 washers (10) and 14 screws (9).



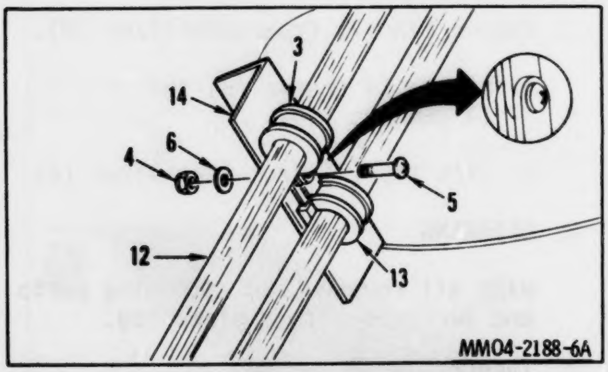
2. Install clamps (3) on wire bundle (12).

   a. Position clamp (3) on wire bundle (12).

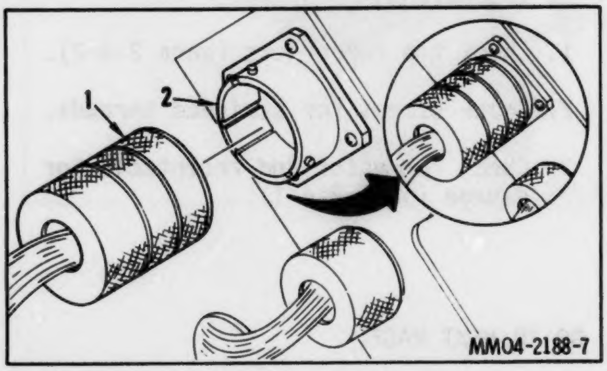
   b. Insert screw (5) through clamp (3), clamp (13), bracket (14), and washer (6).

   c. Hold screw (5).

   d. Install nut (4).



3. Attach connector (1) to receptacle (2).



GO TO NEXT PAGE

4. Inspect (TI).

5. Install radar warning receiver (TM 11-1520-238-23).

6. Install spiral antennas (TM 11-1520-238-23).

7. Install navigation light (para 9-6-7).

8. Install formation lights (para 9-6-8).

9. Perform spiral antenna and radar warning operational check (TM 11-1520-238-23).

10. Perform navigation and formation lights operational check (TM 55-1520-238-T).

END OF TASK

2-4-14. VERTICAL STABILIZER TRAILING EDGE REMOVAL/INSTALLATION 2-4-14

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Stand, Maintenance	1730-00-294-8883
Ohmmeter, Digital	6625-01-125-3471

Materials/Parts:

(E34) Lockwire

Personnel Required:

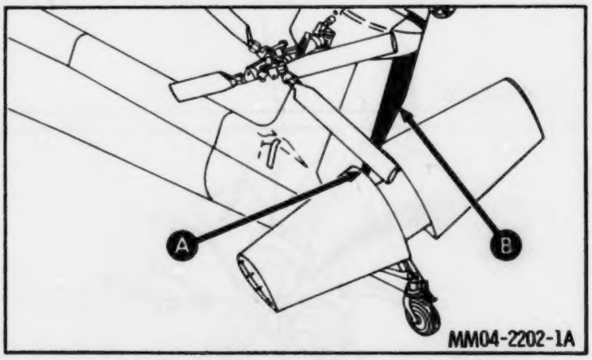
67R10	Attack Helicopter Repairer (2)
66R30	Inspector/Supervisor

References:

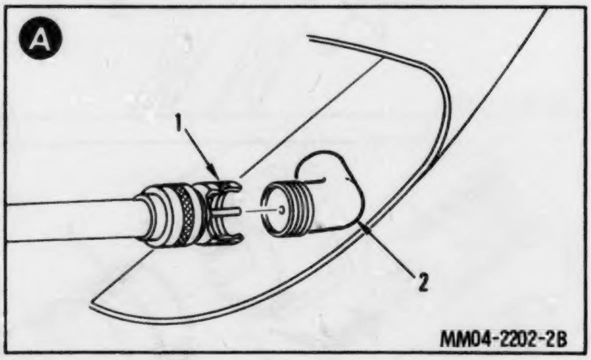
TM 55-1500-323-24
TM 55-1500-345-23

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access panels L540 and L546 removed



MM04-2202-1A



MM04-2202-2B

A. REMOVAL

1. **Detach connector P329 (1) from antenna connector E317 (2).**

   a. Remove lockwire.

   b. Detach connector P329 (1) from antenna connector E317 (2).

GO TO NEXT PAGE

2-4-14. VERTICAL STABILIZER TRAILING EDGE REMOVAL/INSTALLATION (cont) 2-4-14

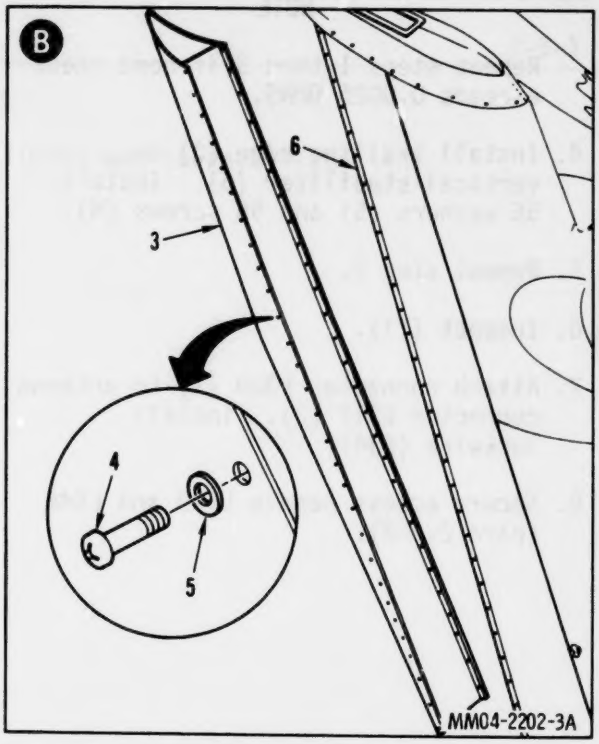
2. **Remove trailing edge (3) from vertical stabilizer (6).** Remove 56 screws (4) and 56 washers (5).

B. CLEANING

Wipe all removed and attaching parts and surfaces with a clean rag.

C. INSPECTION

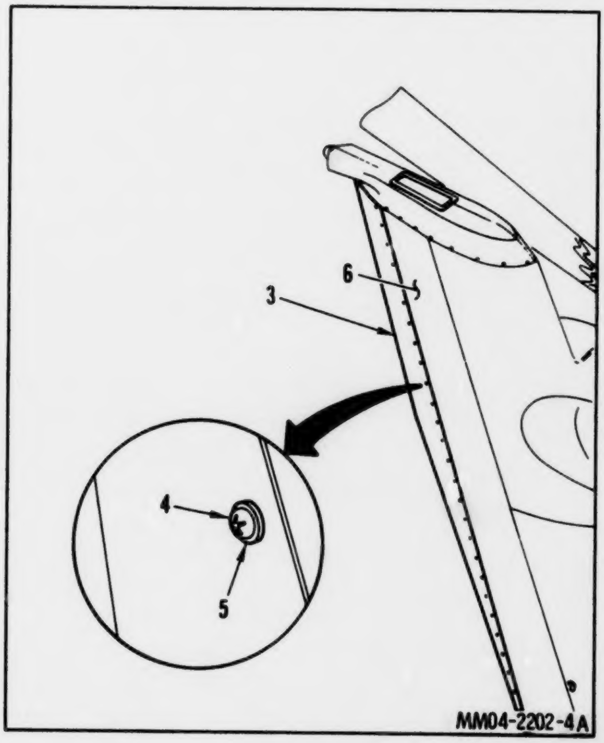
1. **Check the trailing edge for damage** (para 2-4-2).
2. **Check the trailing edge for** corrosion (para 2-4-2).
3. **Check screws for stripped threads.** None allowed.
4. **Check connector P329 and connector E317 for damage** (TM 55-1500-323-24).



MM04-2202-3A

D. INSTALLATION

1. **Strip both edges of vertical stabilizer (6) to bare metal** (TM 55-1500-345-23).
2. **Bond check both edges of vertical stabilizer (6)** (TM 55-1500-323-24). Bond resistance not to exceed **0.0025 OHMS.** Use ohmmeter.
3. **Chemically treat both edges of vertical stabilizer (6)** (TM 55-1500-345-23).



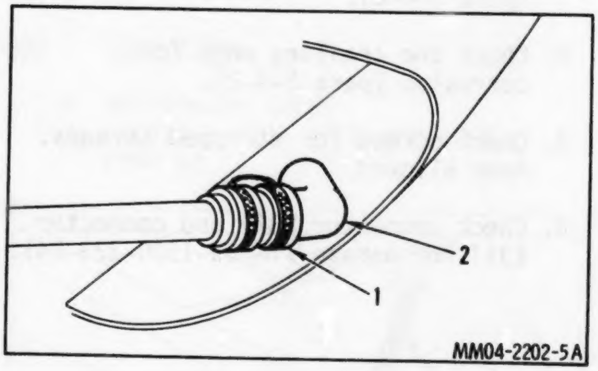
MM04-2202-4A

GO TO NEXT PAGE

NOTE

Repeat steps 1 thru 3 if bond check exceeds 0.0025 OHMS.

4. Install trailing edge (3) on vertical stabilizer (6). Install 56 washers (5) and 56 screws (4).
5. Repeat step 3.
6. Inspect (TI).
7. Attach connector P329 (1) to antenna connector E317 (2). Install lockwire (E34).
8. Secure access panels L540 and L546 (para 2-2-2).



END OF TASK

Section V. WINGS MAINTENANCE

2-5-1. WINGS INSPECTION

NOTE

Refer to para 2-5-2 for damage limits and corrective action.

1. **Check skin panels, access covers, and fairings for corrosion, cracks, tears, punctures, and loose or missing fasteners.**
2. **Check fittings, castings, and forgings for corrosion or cracks.**
3. **Check structural attach points for wear caused by movement.** No movement is allowed at these attach points.

END OF TASK

2-5-2. CLASSIFICATION OF WING DAMAGE AND TYPES OF REPAIR 2-5-2

This task covers: A. DAMAGE LIMITS CATEGORIES B. TYPES OF DAMAGE (EXAMPLES): LIMITS AND ACTION C. CORROSION D. IMPACTOR FATIGUE DAMAGE

A. DAMAGE LIMITS CATEGORIES

The following damage categories help you establish repairable limits for particular areas and parts. Only applicable categories are listed for a damaged area or part.

Category	Description
A	Negligible damage to be repaired at first opportunity
B	Minor damage requiring immediate action with temporary repair
C	Major damage requiring immediate repair/replacement

B. TYPES OF DAMAGE (EXAMPLES): LIMITS AND ACTION

Category	Limits	Action
1. Type: Skin Corrosion		
A	Less than 20 percent of skin thickness and no more than 25 percent of panel area	Remove corrosion (para 1-5-38).
B	More than 20 percent of skin thickness and less than 50 percent of panel with no effect on adjacent structure	Patch repair (TM 55-1500-204-25/1) not to exceed 25 percent of total panel.
C	More than 50 percent of skin thickness	Replace affected area with patch repair (TM 55-1500-204-25/1).
2. Type: Skin or Sheet Metal Holes, Cracks, or Tears		
A	---	---
B	---	---
C	No cracks or tears more than 25 percent of shortest skin panel dimension	Clean up and patch repair (TM 55-1500-204-25/1).
	No holes greater than **3.00-inches** diameter (cleanup can be no closer than **2.00 inches** to support structure).	Clean up and patch repair (TM 55-1500-204-25/1).

GO TO NEXT PAGE

2-5-2. CLASSIFICATION OF WING DAMAGE AND TYPES OF REPAIR (cont) 2-5-2

C. CORROSION

Category	Limits	Action
1. Structural		
A	Less than 10 percent of material thickness across 25 percent of cross section.	Remove corrosion (para 1-5-38).
B	Greater than 10 percent of material thickness but less than 50 percent of cross section.	Patch repair (TM 55-1500-204-25/1) as long as area remaining allows attaching repair.
C	Greater than minor damage.	Replace.
2. Castings, Forgings		
A	Less than 25 percent of cross section and less than 10 percent of thickness or **0.040-inch** deep.	Repair corroded area (TM 55-1500-204-25/1).
B	Exceeds A.	Replace.
3. Fasteners, Bearings, and Bushings		
A	Removable or allowed to remain without affecting size or function.	Repair (TM 55-1500-204-25/1).
B	Exceeds A.	Replace.
4. Covers		
A	Not applicable	
B	Less than 10 percent of material thickness and less than **4.00 square inches** after cleanup.	Repair (TM 55-1500-204-25/1).
C	Exceeds B or repairs will affect function.	Replace.

GO TO NEXT PAGE

2-5-2. CLASSIFICATION OF WING DAMAGE AND TYPES OF REPAIR (cont) 2-5-2

Category	Limits	Action
D. IMPACT OR FATIGUE DAMAGE		
1. Skin or Sheet Metal Holes, Cracks, or Tears		
B	Holes: less than 3.00 inches in diameter. (Cleanup can be no closer than 2.00 inches to supporting structure, and no more than 5 percent of skin area.)	Clean up and patch repair (TM 55-1500-204-25/1).
B	Cracks or tears: no longer than 25 percent of shortest skin dimension.	Clean up and patch repair (TM 55-1500-204-25/1).
2. Skin or Sheet Metal Nicks or Scratches		
A	Less than 10 percent of material thickness	Clean up (para 1-5-36). (Area cannot exceed 4.00 square inches.)
B	Deeper than 10 percent but less than 25 percent of material thickness	Clean up (para 1-5-36). (Area cannot exceed five percent of skin area and can be no closer than 2.00 inches to supporting structure.)
C	Exceeds B	Replace.
3. Skin Dents		
A	Smooth dents less than 0.25-inch deep	Repair (TM 55-1500-204-25/1).
B	Dents with nicks or gouges or deeper than 0.25-inch	Patch repair (TM 55-1500-204-25/1). (Treat dents as holes).
C	Dents greater than 3.00 inches in diameter or cleanup will exceed 5 percent of skin area or will be closer than 2.00 inches to supporting structure	Replace.

GO TO NEXT PAGE

2-5-2. CLASSIFICATION OF WING DAMAGE AND TYPES OF REPAIR (cont) 2-5-2

Category	Limits	Action
4. Cover Cracks, Tears, and Punctures		
B	Less than 25 percent length of shortest dimension	Repair (TM 55-1500-204-25/1).
5. Kevlar/Epoxy Skin Cracks, Tears, or Punctures		
B	Cracks or tears: Less than 25 percent length of shortest skin dimension	Repair (para 2-7-1).
B	Punctures: less than **2.00 inches** from supporting structure	Repair (para 2-7-1).
C	Exceeds B or hinders normal operation or function	Replace.
6. Kevlar/Epoxy Skin Delamination		
B	No deeper than three plies or **0.050-inch**, whichever is less. (Treat limit-exceeding damages as crack, tear, or puncture repair.)	Repair (para 2-7-1).
7. Kevlar/Epoxy Skin Debonding		
C	Greater than **6.00 inches** but less than 40 percent of panel area	Replace if possibility of danger to crew or helicopter exists.
	Greater than 40 percent of panel area	Replace panel.
8. Kevlar/Epoxy Fairings Debonding		
B		Rebond where ribs, gussets, baffles, stiffeners, seals, and doublers have debonded.

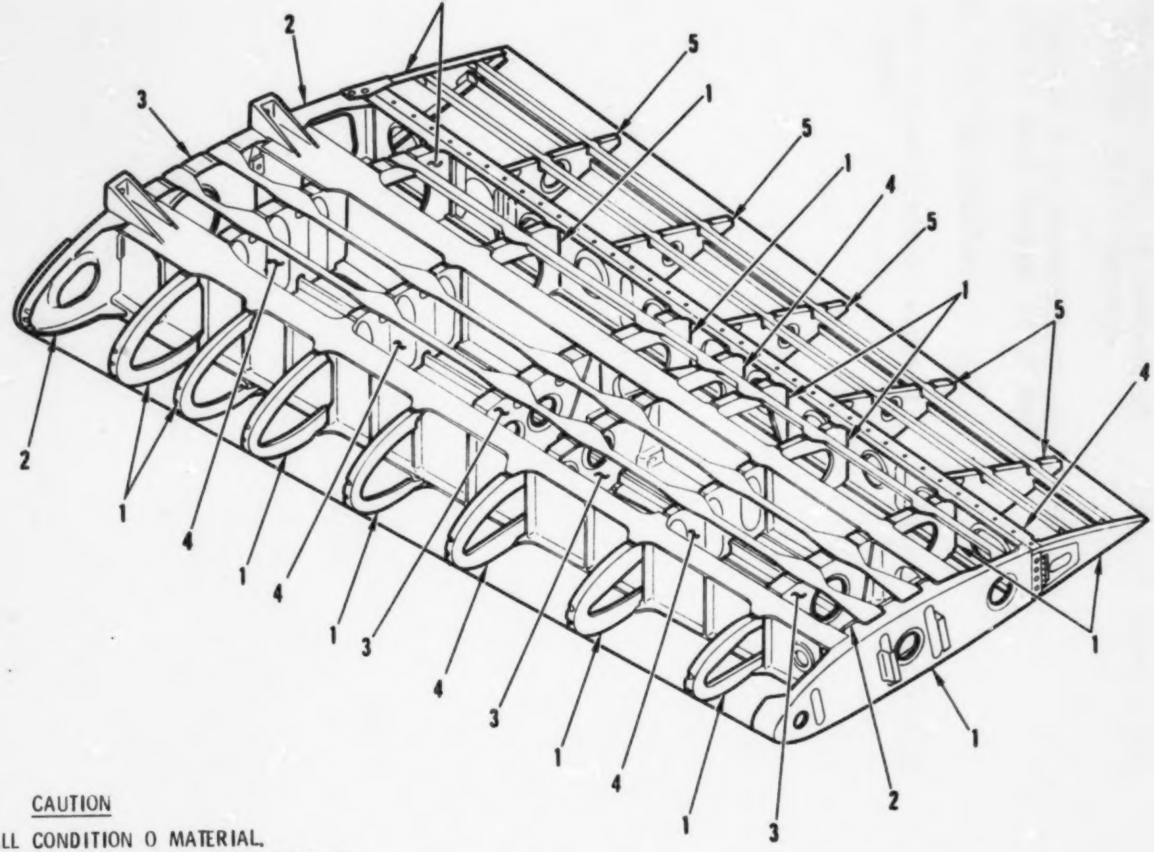
GO TO NEXT PAGE

2-5-2. CLASSIFICATION OF WING DAMAGE AND TYPES OF REPAIR (cont) 2-5-2

Category	Limits	Action
9. Kevlar/Epoxy Fairings Cracks		
B	No longer than 25 percent of shortest skin dimension	Repair (para 2-7-1).
C	Exceeds B or extends from one end of part through other end.	Replace.
10. Kevlar/Epoxy Fairings Erosion		
B	Any broken resin or exposed fibers	Repair (para 2-7-1).

END OF TASK

2-5-3. WING FRAME STRUCTURE



CAUTION

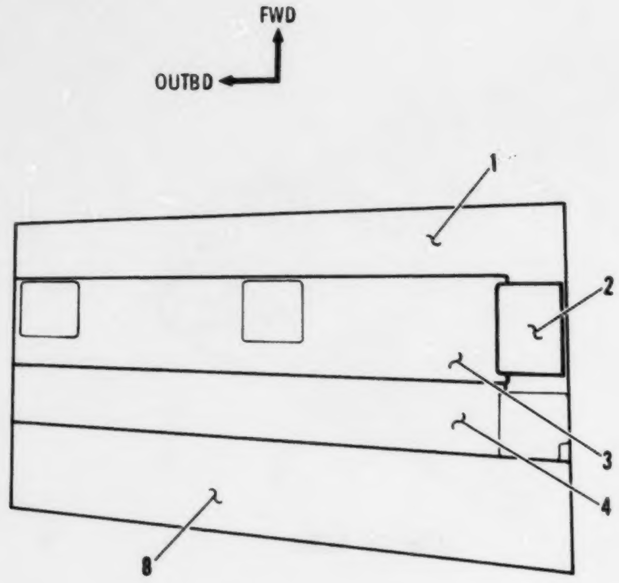
DO NOT INSTALL CONDITION O MATERIAL.
HEAT TREAT TO CONDITION SHOWN AFTER FORMING.

MM04-0010A

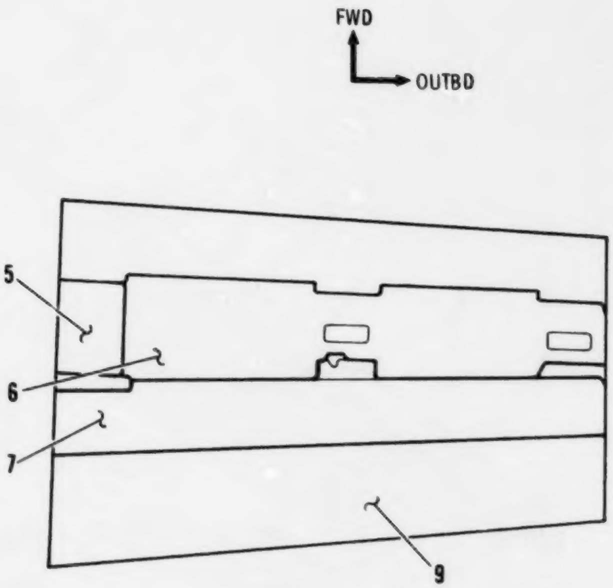
2-5-3. WING FRAME STRUCTURE (cont)

Item	Material	Specification	Condition	Thickness (inches)
1	2024 AL ALY	QQ-A-250/4	T42	0.032
2	2024 AL ALY	QQ-A-250/4	T42	0.050
3	2024 AL ALY	QQ-A-250/4	T42	0.063
4	2024 AL ALY	QQ-A-250/4	T42	0.040
5	2024 AL ALY	QQ-A-250/4	T42	0.025

2-5-4. WING SKIN PLATES



LEFT WING
TOP
VIEW



LEFT WING
BOTTOM
VIEW

MM04-0015B

2-5-4. WING SKIN PLATES (cont)

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T3	0.032	24.50	74.00
2	2024 AL CLAD	QQ-A-250/5	T3	0.071	9.10	12.60
3	2024 AL CLAD	QQ-A-250/5	T3	0.040	14.60	66.50
4	2024 AL CLAD	QQ-A-250/5	T3	0.025	9.60	66.00
5	2024 AL CLAD	QQ-A-250/5	T3	0.063	9.10	12.90
6	2024 AL CLAD	QQ-A-250/5	T3	0.032	14.70	66.50
7	2024 AL CLAD	QQ-A-250/5	T3	0.025	10.40	74.40
8	2024 AL CLAD	QQ-A-250/5	T3	0.016	16.50	74.00
9	2024 AL CLAD	QQ-A-250/5	T3	0.016	15.00	74.00

2-5-5. WING REMOVAL 2-5-5

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Socket, 9/16, 1/2 Drive	5120-00-935-7420
Socket, 11/16, 1/2 Drive	5120-00-935-7421
Handle, Ratchet, 1/2 Drive	5120-00-230-6385

Personnel Required:

67R10 Attack Helicopter Repairer (5)
Four to support and guide wing

References:

TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-5-11	Fuel system vented
1-7-2	Helicopter safed
2-2-2	Access cover LW9 or RW9 removed; wing fairings LW10 and LW11 or RW10 and RW11 removed
16-2-5	Pylons removed
2-5-7	Trailing edge removed
7-4-2	Utility hydraulic system vented

NOTE

This task is typical for left or right wing.

A. REMOVAL

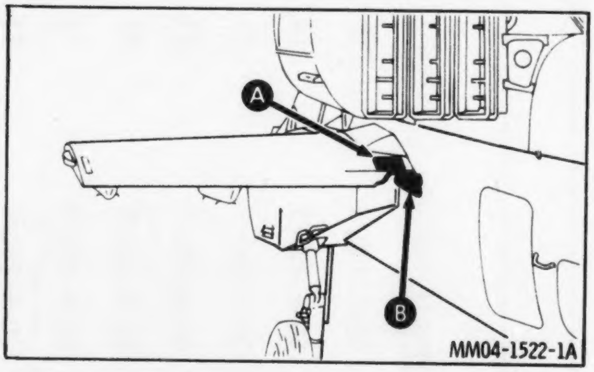
1. **Detach four connectors (1), (2), (3), and (4) from receptacles (5), (6), (7), and (8).**

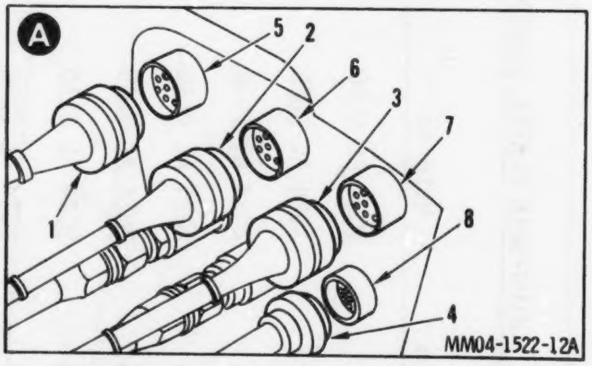
   a. Detach connector P586 (1) from connector J586 (5).

   b. Detach connector P1075 (2) from connector J1075 (6).

   c. Detach connector P587 (3) from connector J587 (7).

   d. Detach connector P115 (4) from connector J115 (8).





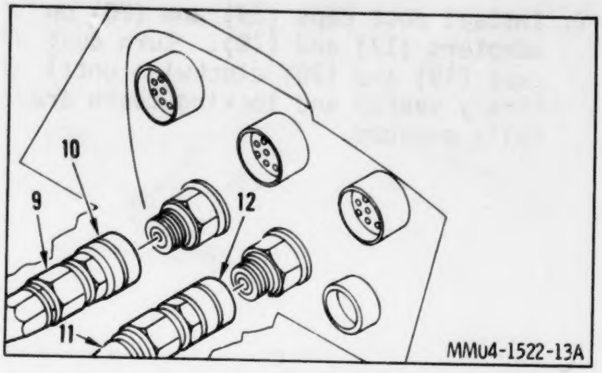
GO TO NEXT PAGE

2. **Disconnect pressure hose (9).**

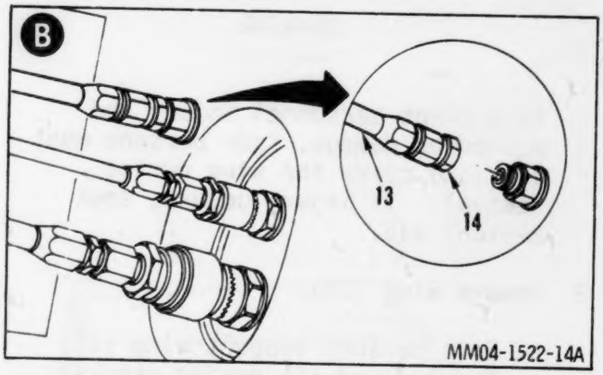
   a. Place rags to catch fluid spills.

   b. Slide sleeve (10) outboard and turn counterclockwise.

3. **Disconnect return hose (11).** Slide sleeve (12) outboard and turn counterclockwise.



4. **Disconnect pitot tube (13).** Remove hose nut (14) from union.



5. **Detach fuel coupling (15) and air coupling (16), if installed.**

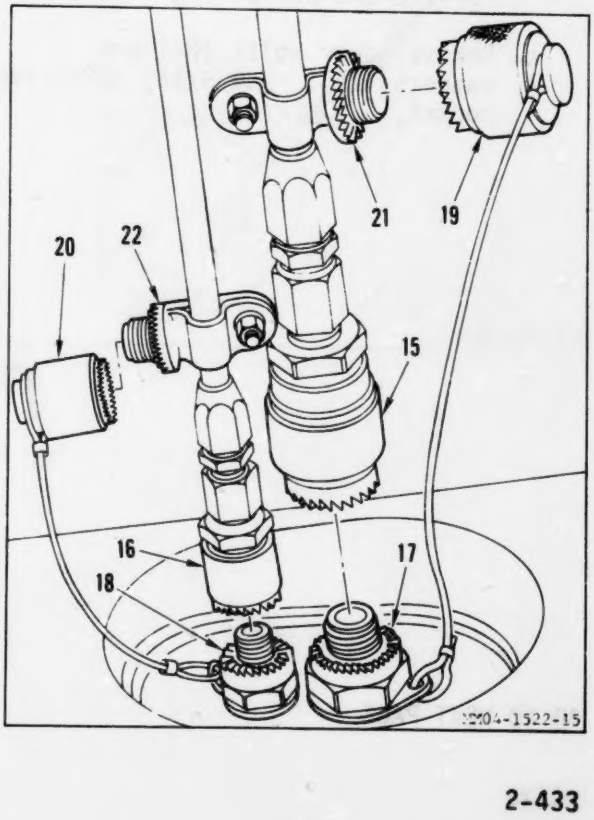
   a. Pull ratchet sleeve on couplings (15) and (16) away from locking teeth on adapters (17) and (18).

   b. Turn ratchet sleeve counterclockwise until free from adapters (17) and (18).

6. **Remove dust caps (19) and (20).**

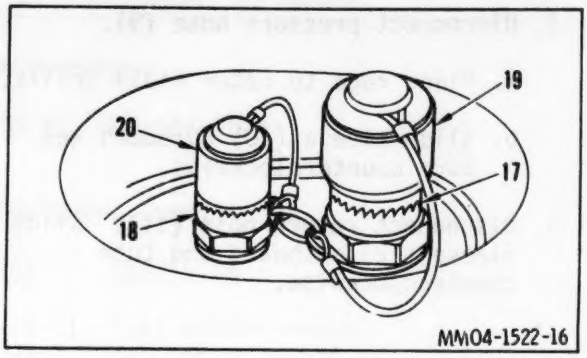
   a. Pull ratchet sleeve on dust caps (19) and (20) away from locking teeth on retainer assemblies (21) and (22).

   b. Turn dust caps (19) and (20) counterclockwise until free from retainers (21) and (22).



GO TO NEXT PAGE

7. Install dust caps (19) and (20) on adapters (17) and (18). Turn dust caps (19) and (20) clockwise until firmly seated and locking teeth are fully engaged.



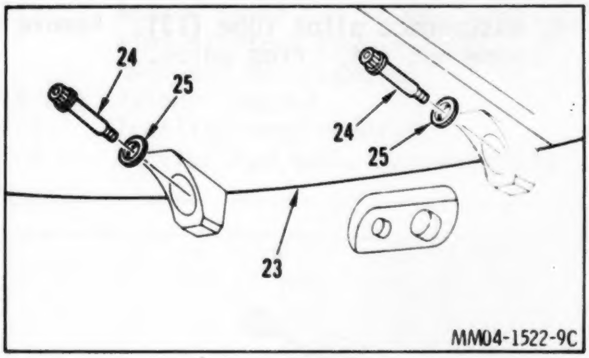
WARNING

To prevent personnel injury and equipment damage, four persons must lift and carry the wing during removal. If injury occurs, seek medical aid.

8. Remove wing (23).

   a. Four persons support wing (23) forward and aft during removal.

   b. Remove lower bolts (24) and washers (25). Use 9/16, 1/2-drive socket.



c. Remove upper bolts (26) and washers (27). Use 11/16, 1/2 drive socket.

d. Carefully pull wing (23) straight out from fuselage (28) and alinement pins (29).

B. CLEANING

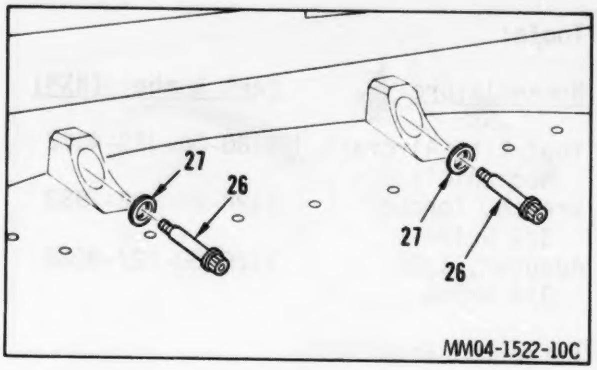
Wipe attach surfaces of wing with clean rag.

C. INSPECTION

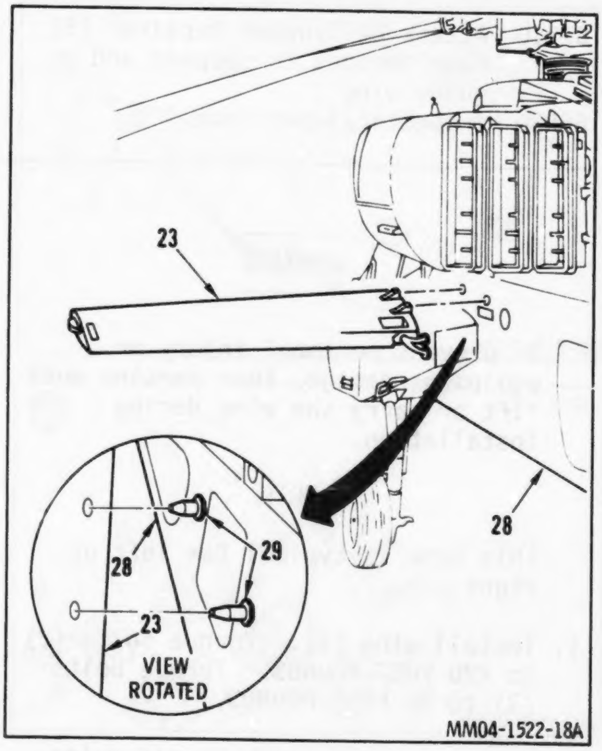
1. Check for cracks, nicks, scratches, and loose rivets (para 2-5-2).
2. Check for broken or sheared bolts.
3. Check condition on anti-skid coating.
4. Check ribs and structure of wing for damage (para 2-5-2).
5. Check for corrosion (para 2-5-2).

D. REPAIR

1. Repair cracks, nicks, scratches, or loose rivets (TM 55-1500-204-25/1).
2. Repair anti-skid coating (TM 55-1500-204-25/1).
3. Repair ribs and structural damage (TM 55-1500-204-25/1).



MM04-1522-10C



MM04-1522-18A

END OF TASK

2-5-6. WING INSTALLATION 2-5-6

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque 3/4 Drive	5120-00-902-7983
Adapter, 1/2, 3/4 Drive	5120-00-227-8088

Personnel Required:

67R10	Attack Helicopter Repairer (5) Four persons to support and guide wing
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T
TM 9-1230-476-20-1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-5-10	Fuel system vented
7-4-2	Utility hydraulic system vented

WARNING

To prevent personal injury or equipment damage, four persons must lift or carry the wing during installation.

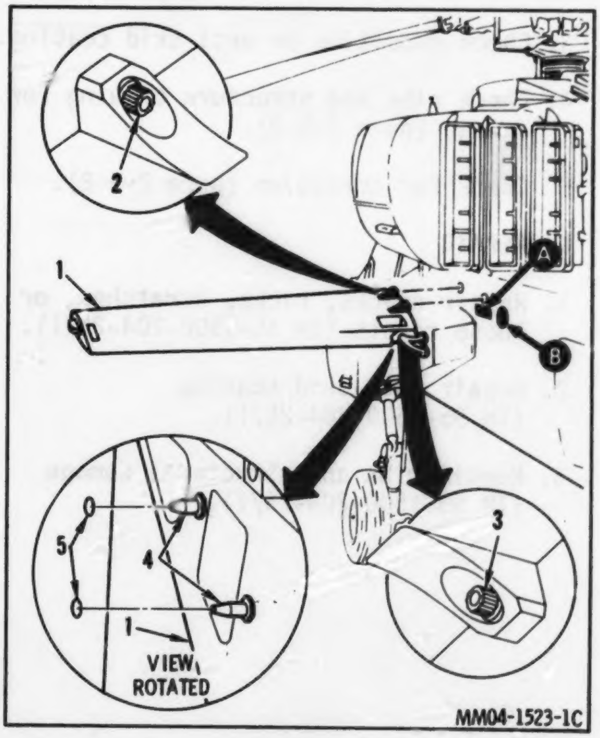
NOTE

This task is typical for left or right wing.

1. **Install wing (1). Torque bolts (2) to 220 FOOT-POUNDS. Torque bolts (3) to 90 FOOT-POUNDS.**

   a. Four persons support and guide wing (1) during installation.

   b. Carefully aline wing alinement pins (4) with wing holes (5).



MM04-1523-1C

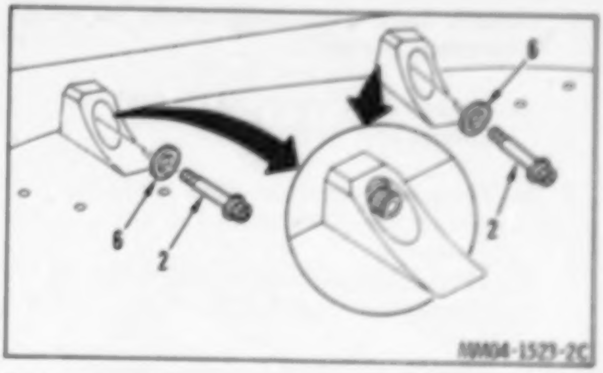
GO TO NEXT PAGE

2-5-6. WING INSTALLATION (cont)

NOTE

Install washers with countersinks facing bolt heads.

c. Install two countersink washers (6) and two upper bolts (2). Torque bolts (2) to **220 FOOT-POUNDS**. Use 1/2 drive adapter.

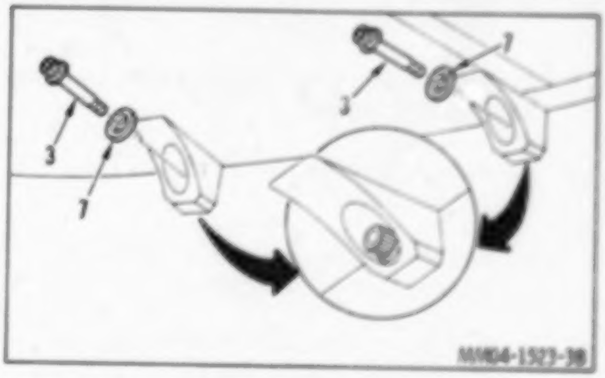


NOTE

Ensure lower bolts are long enough to permit not less than 0.100 inch protrusion through the fuselage mounted barrel nuts. A measurement of bolt length must be taken prior to installation.

d. Measure bolt (3). Length will be **2.275 to 2.305 INCHES.**

e. Install two countersink washers (7) and two lower bolts (3). Torque bolts (3) to **90 FOOT-POUNDS**. Use 1/2 drive adapter.



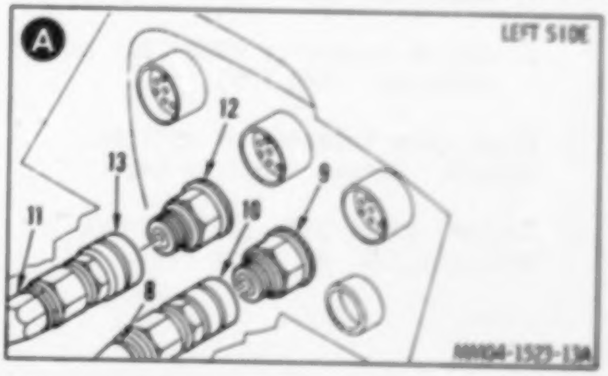
2. Inspect (TI).

3. **Contact hydraulic return coupling (8) to nipple (9).**

   a. Place rags to catch fluid spills.

   b. Aline coupling (8) and nipple (9).

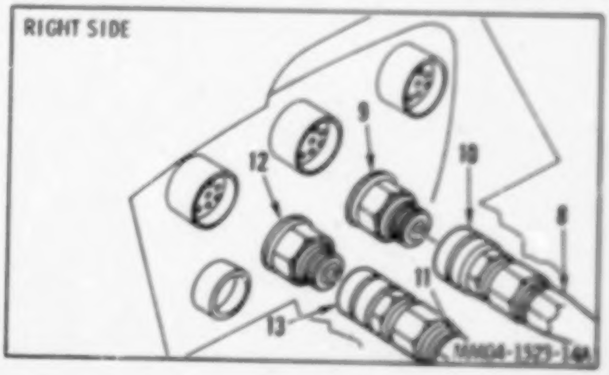
   c. Turn sleeve clockwise on return coupling (10) until seated and locking teeth fully engage.



4. **Connect hydraulic pressure coupling (11) to nipple (12).**

   a. Aline coupling (11) and nipple (12).

   b. Turn sleeve clockwise on pressure coupling (13) until seated and locking teeth fully engage.



GO TO NEXT PAGE

2-5-6. WING INSTALLATION (cont)

5. **Attach left side connectors to wing disconnect panel.**

   a. Attach connector P115 (14) to connector J115 (15).

   b. Attach connector P587 (16) to connector J587 (17).

   c. Attach connector P1075 (18) to connector J1075 (19).

   d. Attach connector P586 (20) to connector J586 (21).

6. **Attach right side connectors to wing disconnect panel.**

   a. Attach connector P116 (22) to connector J116 (23).

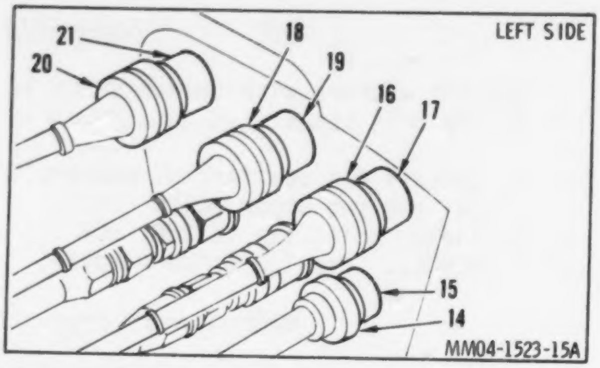
   b. Attach connector P589 (24) to connector J589 (25).

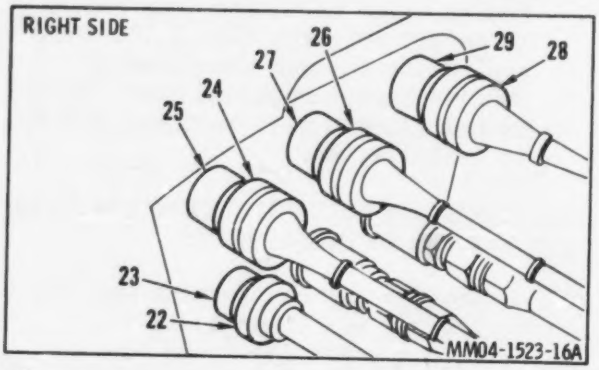
   c. Attach connector P1074 (26) to connector J1074 (27).

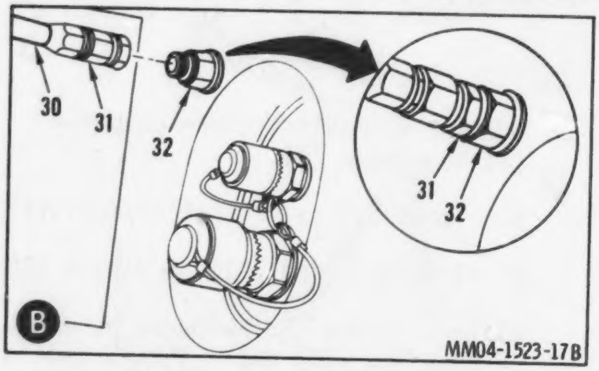
   d. Attach connector P588 (28) to connector J588 (29).

7. **Clean wing interior of spilled fluids.** Remove tools or rags.

8. **Install pitot tube (30).** Install hose nut (31) on union (32).







GO TO NEXT PAGE

9. **Remove dust cap (33) from adapter (34).**

   a. Pull ratchet sleeve on cap (33) away from locking teeth on adapter (34).

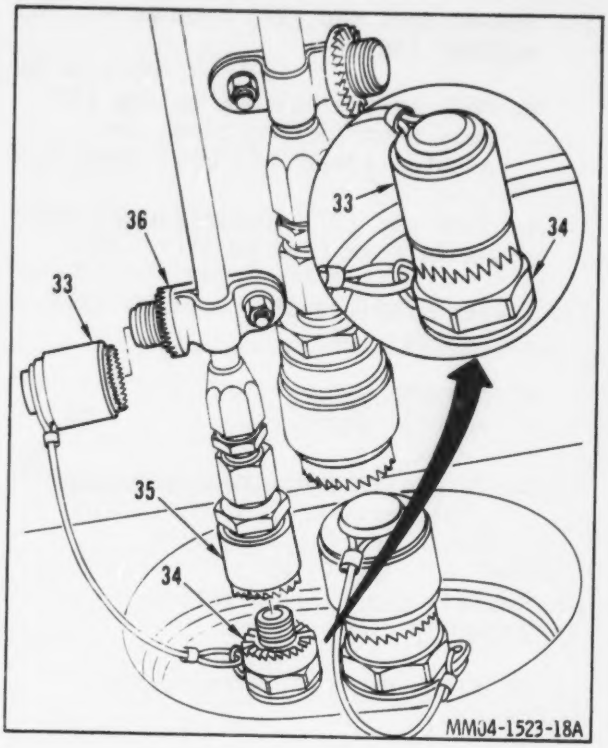
   b. Turn cap (33) counterclockwise until free from adapter (34).

10. **Connect fuel air supply coupling (35) to adapter (34), if required.**

    a. Aline coupling (35) with adapter (34).

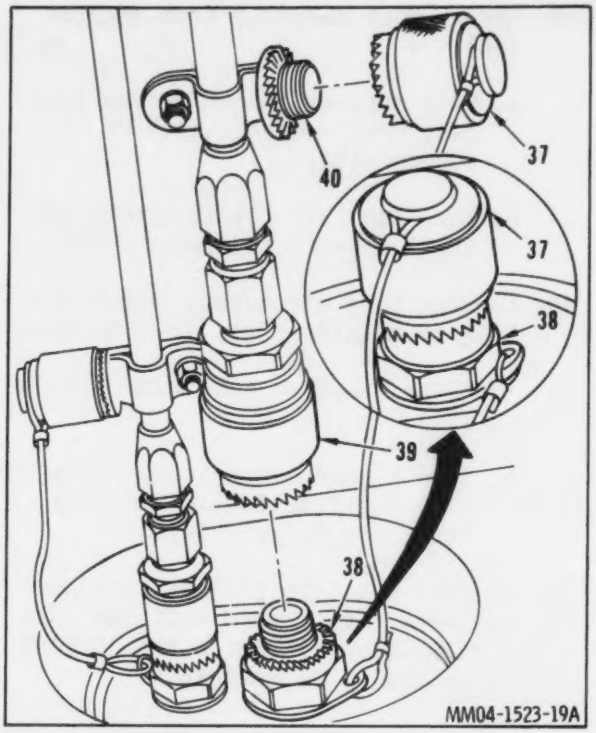
    b. Turn sleeve clockwise on coupling (35) until seated and locking teeth are fully engaged.

11. **Install dust cap (33) on retainer assembly (36).** Turn dust cap (33) clockwise until seated and locking teeth are fully engaged.



GO TO NEXT PAGE

2-5-6. WING INSTALLATION (cont)



12. **Remove dust cap (37) from adapter (38).**

    a. Pull ratchet sleeve on cap (37) away from locking teeth on adapter (38).

    b. Turn cap (37) counterclockwise until free from adapter (38).

13. **Connect fuel supply coupling (39) to adapter (38).**

    a. Aline coupling (39) with adapter (38).

    b. Turn sleeve clockwise on coupling (39) until seated and locking teeth are fully engaged.

14. **Install cap (37) on retainer assembly (40).**

    a. Aline cap (37) with retainer (40).

    b. Turn cap (37) clockwise until seated and locking teeth are fully engaged.

15. **Inspect (TI).**

16. **Secure access cover LW9 or RW9; fairings LW10 and LW11 or RW10 and RW11** (para 2-2-2).

17. **Install wing trailing edge** (para 2-5-7).

18. **Install pylons** (para 16-2-5).

19. **Perform flight instrument operational check** (TM 55-1520-238-T).

20. **Perform boresight operational check** (TM 9-1230-476-20-1).

END OF TASK

2-5-7. WING TRAILING EDGE REMOVAL/INSTALLATION 2-5-7

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

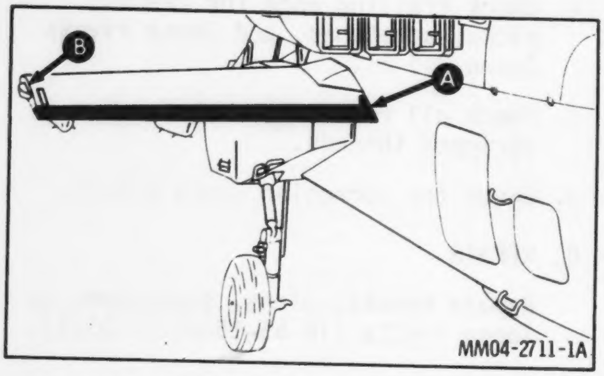
TM 55-1520-204-25/1

Equipment Conditions:

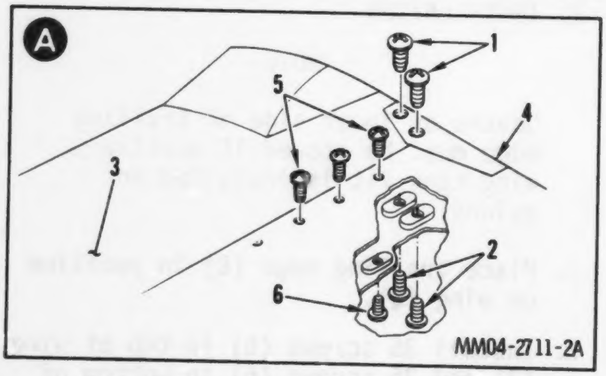
Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access fairing P3 removed

NOTE

This task is typical for left or right trailing edge.



MM04-2711-1A



MM04-2711-2A

A. REMOVAL

1. Remove two screws (1) from top and two screws (2) from bottom of wing (3) at tie (4).
2. Remove 36 screws (5) from top of wing (3) and 35 screws (6) from bottom of wing (3).

GO TO NEXT PAGE

3. Remove four screws (7) from trailing edge (8) at tip of wing (3).
4. Remove trailing edge (8) from wing (3).

B. CLEANING

Wipe attaching surfaces of trailing edge with a clean rag.

C. INSPECTION

1. Check trailing edge for cracks, nicks, scratches, and loose rivets (para 2-5-2).
2. Check all removed screws for stripped threads.
3. Check for corrosion (para 2-5-2).

D. REPAIR

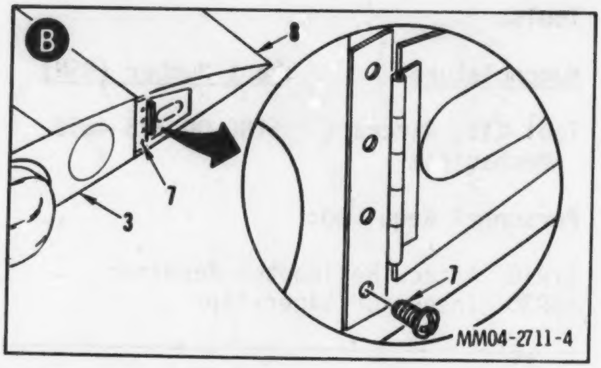
Repair cracks, nicks, scratches, or loose rivets (TM 55-1500-204-25/1).

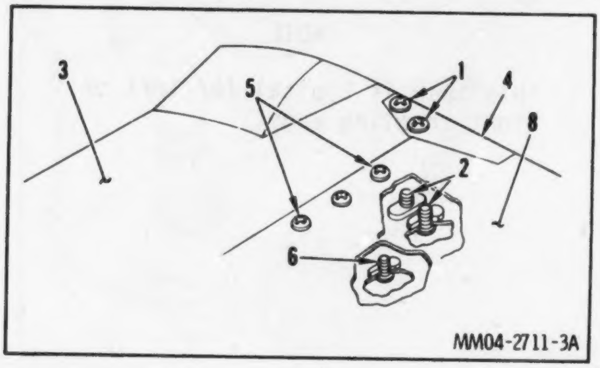
E. INSTALLATION

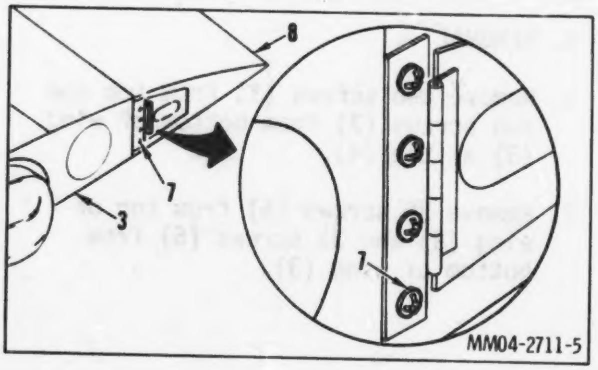
NOTE

Covers on lower side of trailing edge must be stowed if auxiliary wing tank kit is installed on pylons.

1. Place trailing edge (8) in position on wing (3).
2. Install 36 screws (5) in top of wing (3) and 35 screws (6) in bottom of wing (3).







3. Install two screws (1) in top and two screws (2) in bottom of wing (3) at tie (4).
4. Install four screws (7) in trailing edge (8) at tip of wing (3).
5. Inspect (TI).
6. Secure access fairing P3 (para 2-2-1).

END OF TASK

Section VI. NACELLES MAINTENANCE

2-6-1. NACELLES INSPECTION 2-6-1

NOTE

Refer to para 2-6-2 for damage limits and corrective action.

1. Check skin panels, access covers, and fairings for corrosion, cracks, tears, punctures, and loose or missing fasteners.
2. Check engine mounts for corrosion, cracks, and loose mounting.
3. Check structural attach points for wear caused by movement. No movement is allowed at these attach points.

END OF TASK

2-6-2. CLASSIFICATION OF NACELLE DAMAGE AND TYPES OF REPAIR 2-6-2

This task covers: A. DAMAGE LIMITS CATEGORIES B. TYPES OF DAMAGE (EXAMPLES): LIMITS AND ACTION C. CORROSION D. IMPACTOR FATIGUE DAMAGE

A. DAMAGE LIMITS CATEGORIES

The following damage categories are assigned to help you establish repairable limits for particular areas and parts. Only applicable categories are listed for a damaged area or part.

Category	Description
A	Negligible damage to be repaired at first opportunity
B	Minor damage requiring immediate action with temporary repair
C	Major damage requiring immediate repair/replacement

B. TYPES OF DAMAGE (EXAMPLES): LIMITS AND ACTION

Category	Limits	Action
1. Type: Skin Corrosion		
A	Less than 20 percent of skin thickness and no more than 25 percent of panel area	Remove corrosion (para 1-5-38).
B	More than 20 percent of skin thickness and less than 50 percent of panel with no effect on adjacent structure	Patch repair (TM 55-1500-204-25/1) not to exceed 25 percent of total panel.
C	More than 50 percent of skin thickness	Replace affected area with patch repair (TM 55-1500-204-25/1).
2. Type: Skin or Sheet Metal Holes, Cracks, or Tears		
A	---	---
B	---	---
C	No cracks or tears more than 25 percent of shortest skin panel dimension	Clean up and patch repair (TM 55-1500-204-25/1).
	No holes greater than **3.00-inches** diameter (cleanup can be no closer than **2.00 inches** to support structure).	Clean up and patch repair (TM 55-1500-204-25/1).

GO TO NEXT PAGE

2-6-2. CLASSIFICATION OF NACELLE DAMAGE AND TYPES OF REPAIR (cont) 2-6-2

C. CORROSION

Category	Limits	Action
1. Structural		
A	Less than 10 percent of material thickness across 25 percent of cross section.	Remove corrosion (para 1-5-38).
B	Greater than 10 percent of material thickness but less than 50 percent of cross section.	Patch repair (TM 55-1500-204-25/1) as long as area remaining allows attaching repair.
C	Greater than minor damage.	Replace.
2. Castings, Forgings		
A	Less than 25 percent of cross section and less than 10 percent of thickness or **0.040-inch** deep.	Repair corroded area (TM 55-1500-204-25/1).
B	Exceeds A.	Replace.
3. Fasteners, Bearings, and Bushings		
A	Removable or allowed to remain without affecting size or function.	Repair (TM 55-1500-204-25/1).
B	Exceeds A.	Replace.
4. Doors		
A	Not applicable	
B	Less than 10 percent of material thickness and less than **4.00 square inches** after cleanup.	Repair (TM 55-1500-204-25/1).
C	Exceeds B or repairs will affect function.	Replace.

GO TO NEXT PAGE

2-6-2. CLASSIFICATION OF NACELLE DAMAGE AND TYPES OF REPAIR (cont) 2-6-2

Category	Limits	Action
D. IMPACT OR FATIGUE DAMAGE		
1. Skin or Sheet Metal Holes, Cracks, or Tears		
B	Holes: less than **3.00 inches** in diameter. (Cleanup can be no closer than **2.00 inches** to supporting structure, and no more than 5 percent of skin area.)	Clean up and patch repair (TM 55-1500-204-25/1).
B	Cracks or tears: no longer than 25 percent of shortest skin dimension.	Clean up and patch repair (TM 55-1500-204-25/1).
2. Skin or Sheet Metal Nicks or Scratches		
A	Less than 10 percent of material thickness	Clean up (para 1-5-36). (Area cannot exceed **4.00 square inches.**)
B	Deeper than 10 percent but less than 25 percent of material thickness	Clean up (para 1-5-36). (Area cannot exceed five percent of skin area and can be no closer than **2.00 inches** to supporting structure.)
C	Exceeds B.	Replace.
3. Skin Dents		
A	Smooth dents less than **0.25-inch** deep	Repair (TM 55-1500-204-25/1).
B	Dents with nicks or gouges or deeper than **0.25-inch**	Patch repair (TM 55-1500-204-25/1). (Treat dents as holes).
C	Dents greater than **3.00 inches** in diameter or cleanup will exceed 5 percent of skin area or will be closer than **2.00 inches** to supporting structure	

GO TO NEXT PAGE

2-6-2. CLASSIFICATION OF NACELLE DAMAGE AND TYPES OF REPAIR (cont) 2-6-2

Category	Limits	Action
4. Door Cracks, Tears, and Punctures		
B	Less than 25 percent length of shortest dimension	Repair (TM 55-1500-204-25/1).
C	Exceeds B.	Replace.
5. Kevlar/Epoxy Skin Cracks, Tears, or Punctures		
B	Cracks or tears: Less than 25 percent length of shortest skin dimension	Repair (para 2-7-1).
	Punctures: less than **2.00 inches** from supporting structure	Repair (para 2-7-1).
C	Exceeds B or hinders normal operation or function	Replace.
6. Kevlar/Epoxy Skin Delamination		
B	No deeper than three plies or **0.050-inch,** whichever is less. (Treat limit-exceeding damages as crack, tear, or puncture repair.)	Repair (para 2-7-1).
7. Kevlar/Epoxy Skin Debonding		
B	Greater than **6.00 inches** but less than 40 percent of panel area	Replace if possibility of danger to crew or helicopter exists.
	Greater than 40 percent of panel area	Replace panel.
8. Kevlar/Epoxy Fairings Debonding		
B		Rebond where ribs, gussets, baffles, stiffeners, seals, and doublers have debonded.

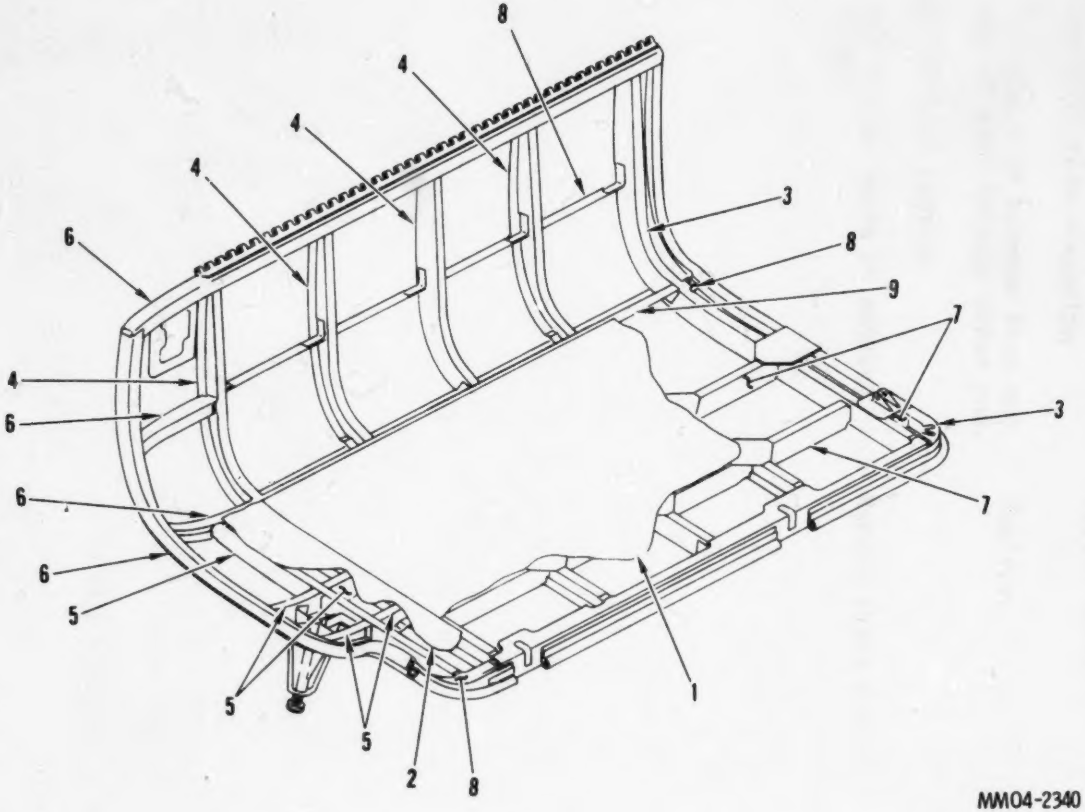
GO TO NEXT PAGE

2-6-2. CLASSIFICATION OF NACELLE DAMAGE AND TYPES OF REPAIR (cont) 2-6-2

Category	Limits	Action
9. Kevlar/Epoxy Fairings Cracks		
B	No longer than 25 percent of shortest skin dimension	Repair (para 2-7-1).
C	Exceeds B or extends from one end of part through other end.	Replace.
10. Kevlar/Epoxy Fairings Erosion		
B	Any broken resin or exposed fibers	Repair (para 2-7-1).

END OF TASK

2-6-3. WORK PLATFORM NACELLE DOOR FRAME STRUCTURE

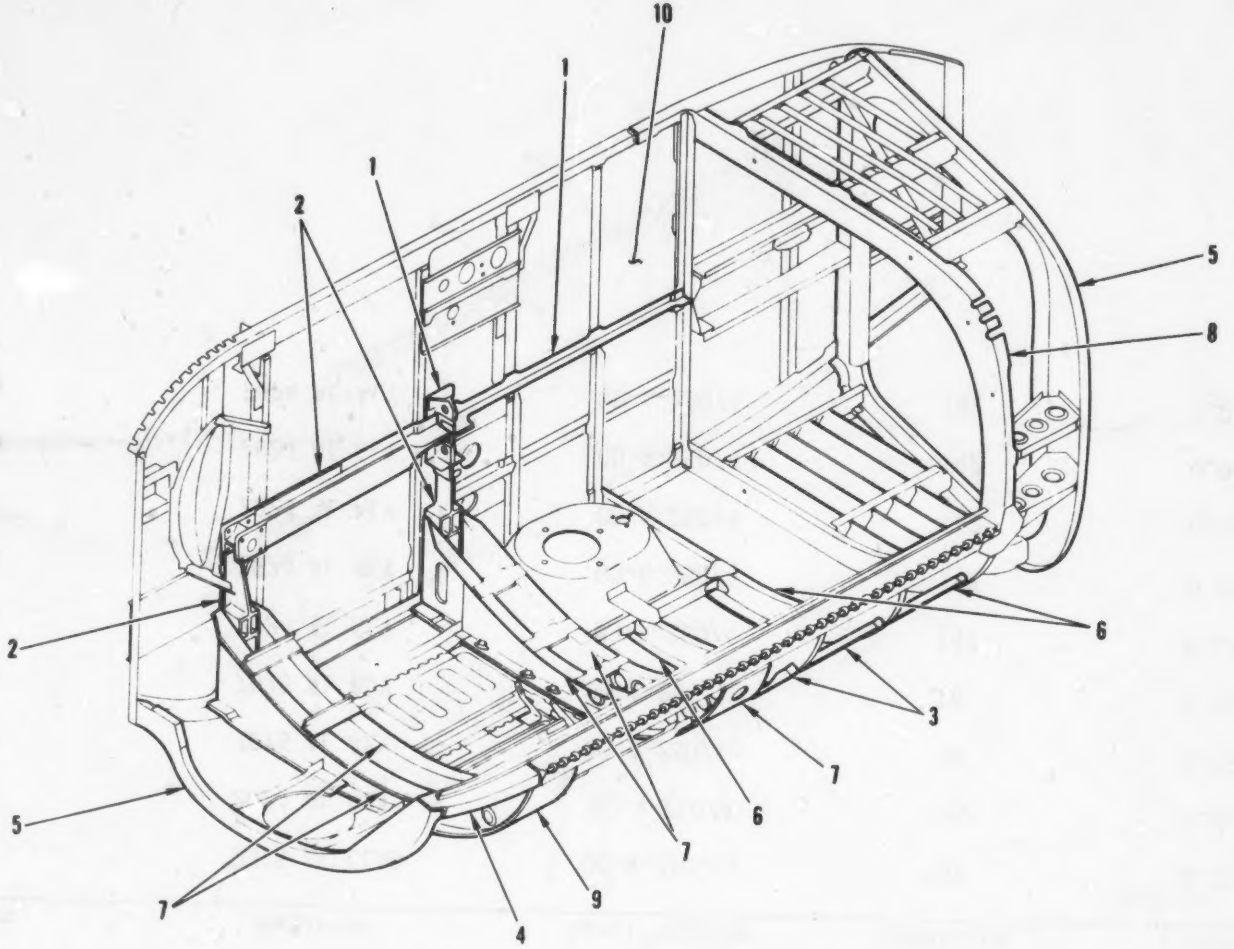


2-6-3. WORK PLATFORM NACELLE DOOR FRAME STRUCTURE (cont) 2-6-3

Item	Material	Specification	Condition	Thickness (inches)
1	7075 AL CLAD	QQ-A-250/13	T6	0.032
2	2024 AL ALY	QQ-A-250/4	T42	0.020
3	7075 AL ALY	QQ-A-250/12	T6	0.063
4	7075 AL ALY	QQ-A-250/12	T6	0.032
5	2024 AL ALY	QQ-A-250/4	T42	0.050
6	2024 AL ALY	QQ-A-250/4	T42	0.063
7	2024 AL ALY	QQ-A-250/4	T42	0.032
8	2024 AL ALY	QQ-A-250/4	T42	0.040
9	2024 AL ALY	QQ-A-250/4	T42	0.071

2-6-4. NACELLE STRUCTURE

2-6-4



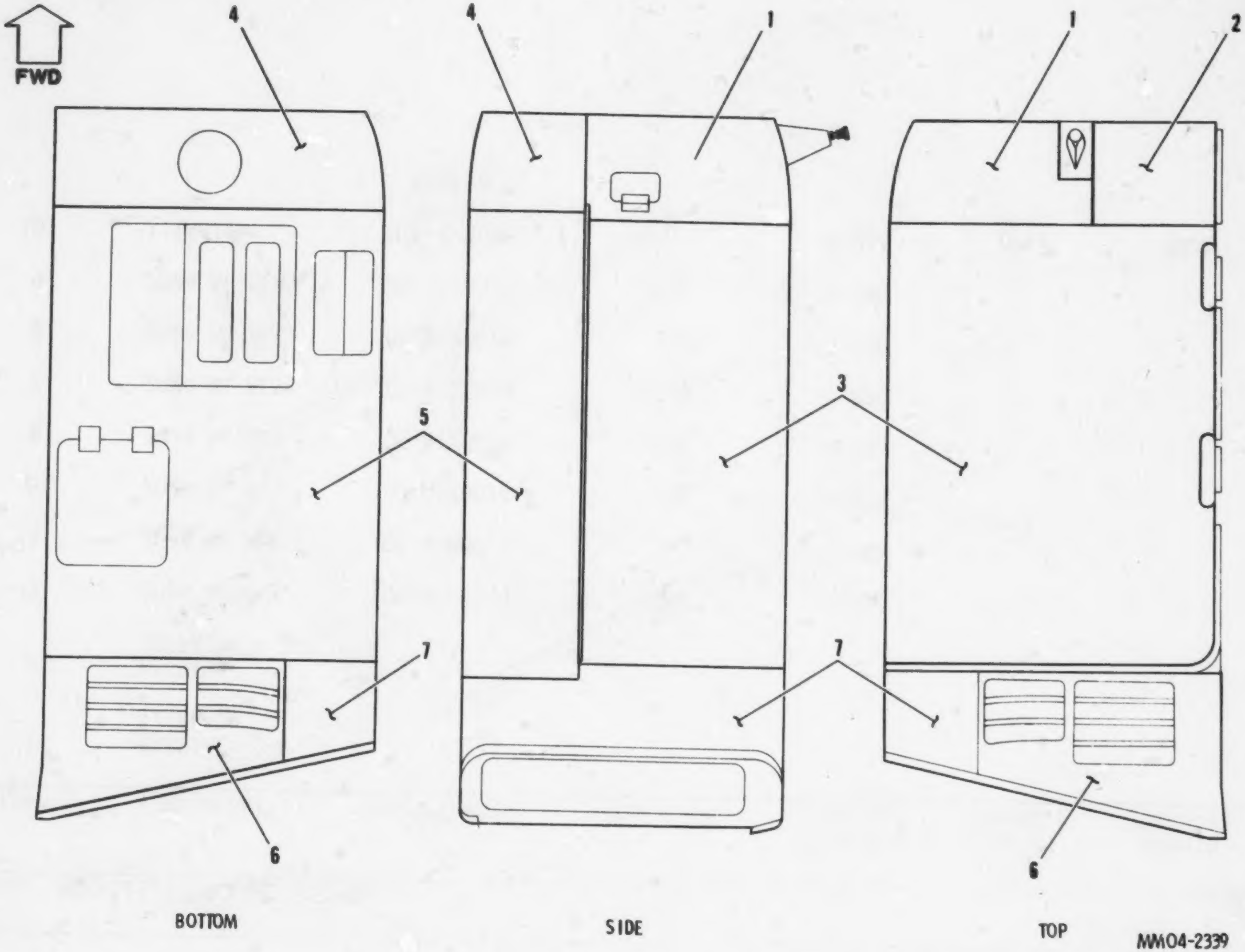
MM04-2337

2-6-4

2-6-4. NACELLE STRUCTURE (cont)

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	MACHINED TITANIUM					
2	MACHINED TITANIUM					
3	2024 AL ALY	QQ-A-250/4	T42	0.032		
4	2024 AL ALY	QQ-A-250/4	T42	0.063		
5	2024 AL ALY	QQ-A-250/4	T42	0.050		
6	2024 AL ALY	QQ-A-250/4	T42	0.040		
7	2024 AL ALY	QQ-A-250/4	T42	0.080		
8	2024 AL ALY	QQ-A-250/4	T42	0.100		
9	2024 AL CLAD	QQ-A-250/5	T42	0.080		
10	TITANIUM	MIL-T-9046 TYPE I COMP B		0.016	29.1	78.0

2-6-5. NACELLE SKIN PLATES



2-6-5. NACELLE SKIN PLATES (cont)

Item	Material	Specification	Condition	Thickness (inches)	Width (inches)	Length (inches)
1	2024 AL CLAD	QQ-A-250/5	T42	0.020	11.0	35.8
2	2024 AL CLAD	QQ-A-250/5	T42	0.020	9.6	13.3
3	7075 AL CLAD	QQ-A-250/13	T6	0.020	41.2	44.6
4	2024 AL CLAD	QQ-A-250/5	T3	0.020	9.0	36.0
5	2024 AL CLAD	QQ-A-250/5	T3	0.020	36.0	41.0
6	2024 AL CLAD	QQ-A-250/5	T42	0.020	24.0	24.5
7	2024 AL CLAD	QQ-A-250/5	T42	0.020	9.0	29.0

Section VII. KEVLAR REPAIR

2-7-1. KEVLAR REPAIR 2-7-1

This task covers: A. SMALL CRACKS B. LARGE CRACKS C. EROSION DAMAGE
D. SMALL DELAMINATED AREAS E. LARGE DELAMINATED AREAS
F. DEBONDED SEALS G. DEBONDED STIFFENERS H. CHAFED PANELS

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Airframe Repairer's	5180-00-323-4876
Respirator, Air Filtering	4240-00-022-2524
Goggles	4240-00-203-0317
Gun, Fluid, Direct Delivery	4930-00-204-4767
Gun, Heater	4940-00-785-1162
Shears, Bent Trimmers	5110-00-203-9462
Gloves, Rubber	8415-00-266-8677
Apron, Impermeable	8415-00-082-6108
C-Clamps	5120-00-180-0907

Materials/Parts:

	Wooden Strips
(E12)	Sealant, Adhesive
(E21)	Abrasive Paper
(E22)	Methyl Ethyl Ketone (MEK)
(E62)	Pressure Sensitive Tape
(E68)	Brush
(E71)	Fabric, Kevlar
(E72)	Cellophane
(E67)	Adhesive, Epoxy

Personnel Required:

68G10 Aircraft Structural Repairer

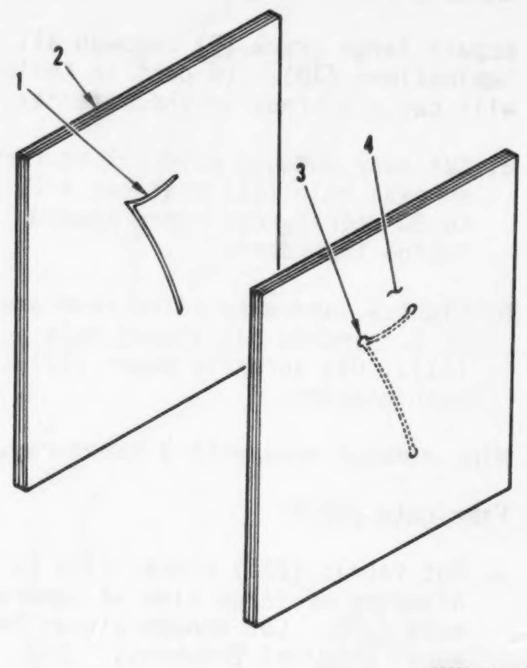
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

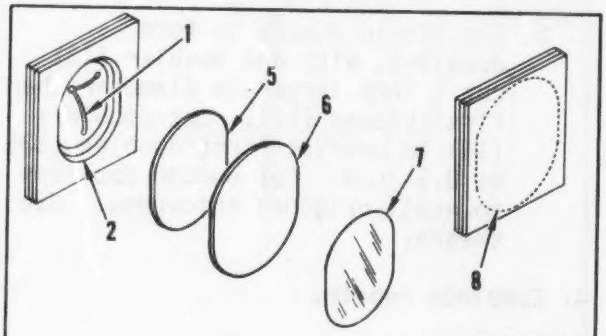
GO TO NEXT PAGE

2-7-1. KEVLAR REPAIR (cont)

A. SMALL CRACKS



MM04-2334-1



MM04-2334-2

1. Repair crack (1) in Kevlar fabric (E71) of less than two inches with edges remaining closed and crack not extending through all laminations (2).
   - a. Stopdrill (3) crack (1) at each end.
   - b. Sand through crack (1) to an undamaged lamination (4). Use abrasive paper (E21). Wear goggles.
   - c. Lightly sand away paint from area approximately 1 inch around crack (1). Use abrasive paper (E21). Wear goggles.
2. Wipe damaged area with a clean rag.
3. Fabricate patch.
   - a. Cut fabric (E71) piece (5) to extend 0.5-inch around crack (1). Use shears.
   - b. Cut fabric (E71) pieces (6) 0.5-inch larger than piece (5) to equal number of laminates (2) sanded away. Use shears.
   - c. Place smallest fabric piece (5) over damaged area, then place other pieces (6) over area until original thickness is restored.
4. Complete repair
   - a. Place piece (7) of cellophane (E72) over fabric patch (8) and press into place to remove all air pockets.
   - b. Take cellophane (E72) off patch (8).
   - c. Brush coat of epoxy adhesive (E67) over patch (8). Use brush (E68). Wear air filtering respirator.
   - d. Cure patch (8) until its surface is hard and tack-free. Use heat gun.

GO TO NEXT PAGE

B. LARGE CRACKS

1. **Repair large crack (9) through all laminations (10). (A dent in Kevlar will cause a break in the material.)**

   a. Cut away damaged material to form an oval hole (11) that has a 15- to 30-degree-edge taper toward inside the fabric.

   b. Lightly sand away paint from area of 1.5 inches all around hole (11). Use abrasive paper (E21). Wear goggles.

2. **Wipe damaged area with a clean rag.**

3. **Fabricate patch.**

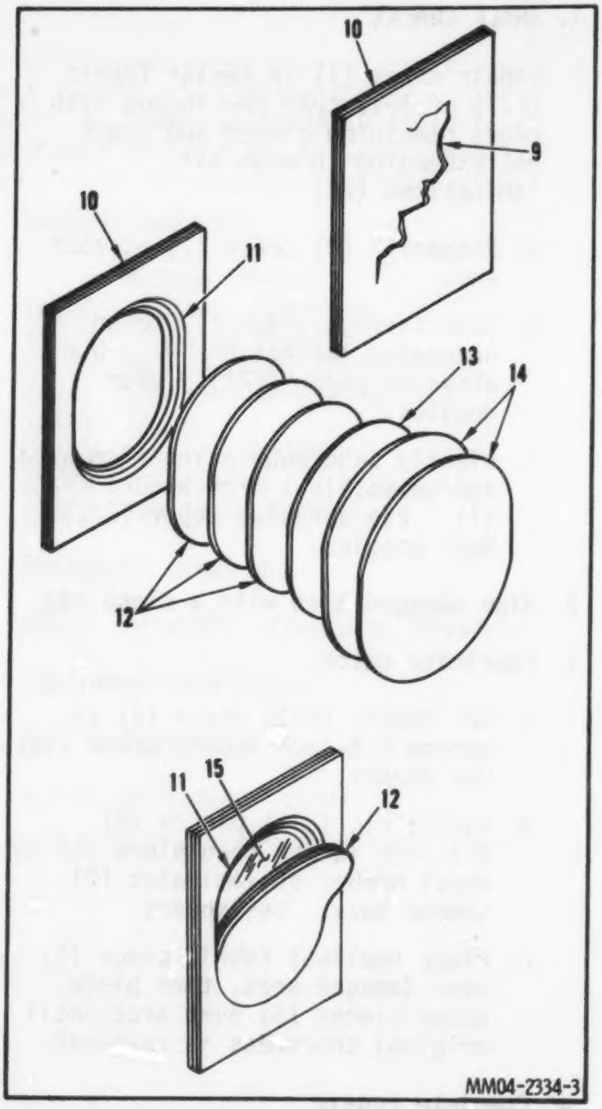
   a. Cut fabric (E71) pieces (12) to diameter of large side of tapered hole (11). Cut enough pieces to equal original thickness. Use shears.

   b. Cut fabric pieces to form doublers, with one doubler (13) cut 1 inch larger in diameter than first pieces (12). Cut doublers (14) to overlap first doubler (13) by 0.5-inch. Cut enough doublers to equal original thickness. Use shears.

4. **Complete repair.**

   a. Tape cellophane (E72) covered support (15) to conform to original contour on inner side of fairing behind hole (11).

   b. Place smaller fabric pieces (12) in hole (11) against support (15). Place doubler (13) over last fabric piece (12), then center two doublers (14) over one another.



GO TO NEXT PAGE

2-7-1. KEVLAR REPAIR (cont)

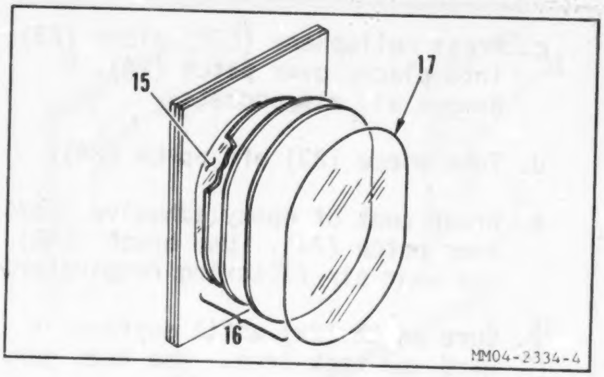
c. Place cellophane (E72) piece (17) over patch (16) and press into place. Remove all air pockets.

d. Take piece (17) off patch (16).

e. Brush coat of epoxy adhesive (E67) over patch (16). Use brush (E68). Wear air filtering respirator.

f. Cure patch until surface is hard and tack-free. Use heat gun.

g. Remove support (15).



C. SURFACE LAMINATES EROSION DAMAGE

1. **Repair erosion damage which has affected surface laminates (18) only.**

a. Cut oval (19) around defective material deep enough to remove damaged layers only. Do not damage laminates (20) unaffected by erosion.

b. Peel off damaged layers (18).

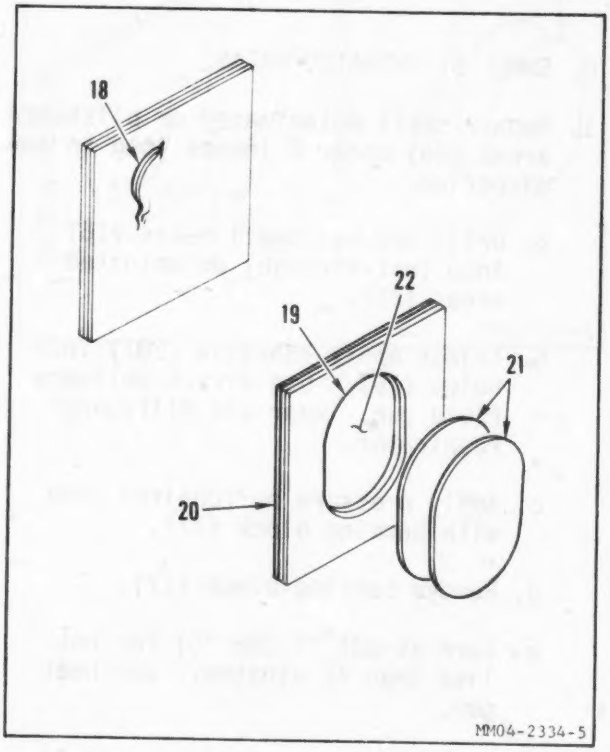
c. Sand exposed layers and 0.5-inch overlap to remove excess resin and paint. Use abrasive paper (E21). Wear goggles.

2. **Wipe damaged area with clean rag.**

3. **Fabricate patch.**

a. Cut pieces (21) of fabric (E71) to overlap exposed area (22) by 0.5-inch. Cut enough pieces to restore area to original thickness. Use shears.

b. Center fabric pieces (21) on exposed areas (22). Overlap edges.



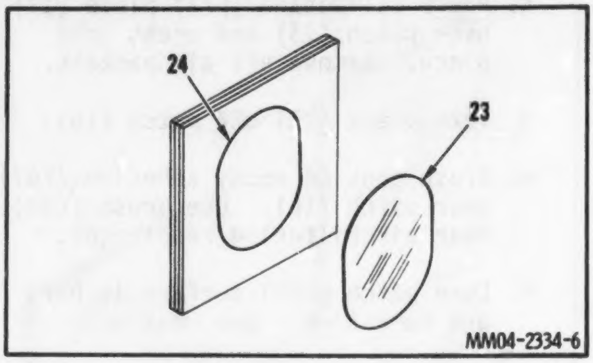
GO TO NEXT PAGE

c. Press cellophane (E72) piece (23) into placer over patch (24). Remove all air pockets.

d. Take piece (23) off patch (24).

e. Brush coat of epoxy adhesive (E67) over patch (24). Use brush (E68) and wear air filtering respirator.

f. Cure patch (24) until surface is hard and tack-free. Use heat gun.



D. SMALL DELAMINATED AREAS

1. Repair small delaminated or blistered areas (25) under 2 inches long in any direction.

   a. Drill several small holes (26) into (not through) delaminated areas (25).

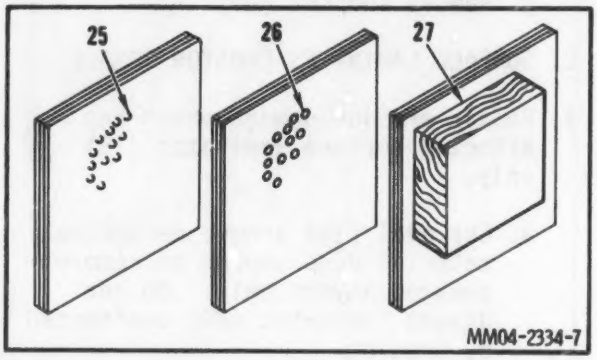
   b. Inject epoxy adhesive (E67) into holes (26). Use direct delivery fluid gun. Wear air filtering respirator.

   c. Apply pressure on repaired area with backing block (27).

   d. Remove backing block (27).

   e. Cure at 205 °F (96 °C) for not less than 45 minutes. Use heat gun.

   f. Lightly abrade repaired area to remove excess resin that extruded through drilled holes (26). Use abrasive paper (E21). Wear goggles.



GO TO NEXT PAGE

E. LARGE DELAMINATED AREAS

1. **Repair large delaminated areas.**

   a. Cut oval (28) around delaminated area deep enough to remove first layer (29) only.

   b. Peel off layer (29).

   c. Cut off succeeding damaged layers (30) one at a time, leaving 0.25-inch-edge margin from each previous layer.

   d. Sand exposed layers (31) plus 0.5-inch overlap of first layer (32) to remove excess resin and paint. Use abrasive paper (E21). Wear goggles.

2. **Wipe exposed area with a clean rag.**

3. **Fabricate patch.**

   a. Cut fabric (E71) pieces (33) to fit each laminate opening plus 0.5-inch overlap. Use shears.

   b. Fit each piece (33) into its respective opening until all are in place.

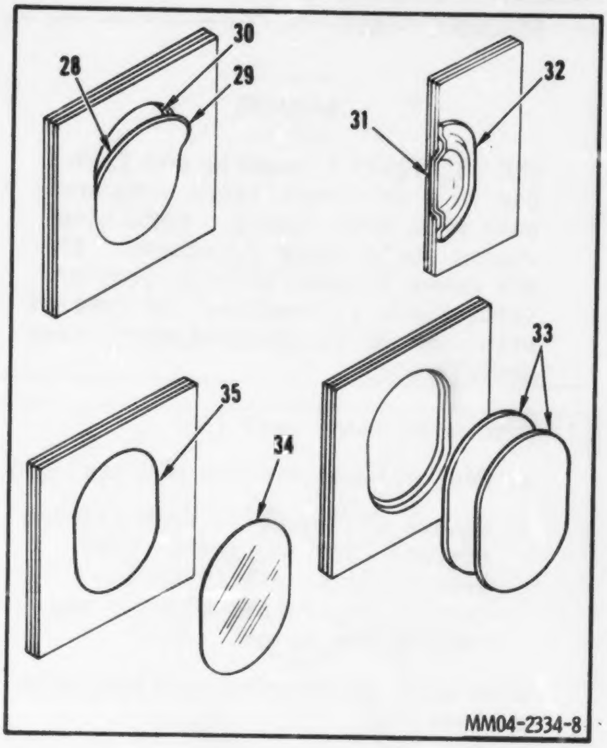
4. **Complete repair.**

   a. Place cellophane (E72) piece (34) over patch (35) and press into place. Remove all air pockets.

   b. Take piece (34) off patch (35).

   c. Brush coat of epoxy adhesive (E67) over patch (35). Use brush (E68). Wear air filtering respirator.

   d. Cure patch (35) until surface is hard and tack-free. Use heat gun.



GO TO NEXT PAGE

F. DEBONDED SEALS

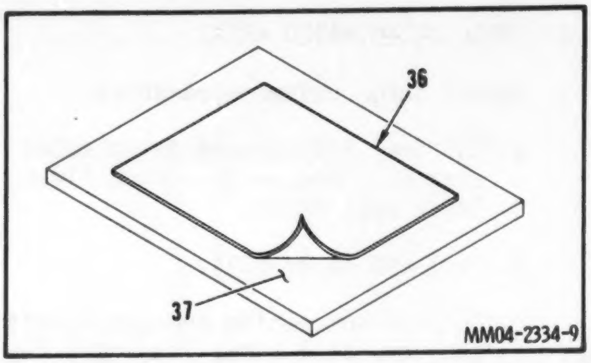
WARNING

MEK is highly flammable and toxic. Use in a well-ventilated area and away from open flames. Breathing vapors could cause dizziness. If MEK comes in contact with eyes or skin, flush with water. If contact with eyes or dizziness occurs, seek medical aid.

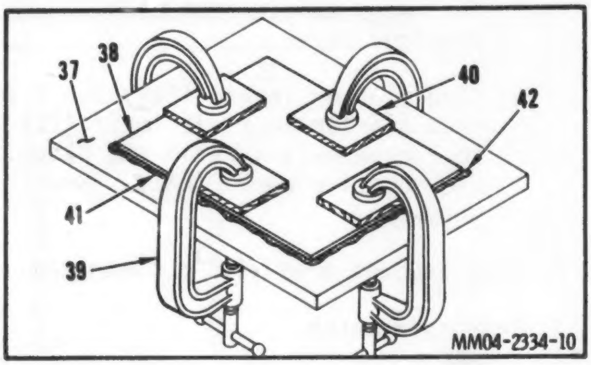
1. **Remove debonded seal (36).**
   a. Peel off and discard old seal (36).
   b. Remove old adhesive from fairing surface (37). Use MEK (E22). Wear goggles, air filtering respirator, rubber gloves, and impermeable apron.
2. **Wipe seal and fairing surfaces with a clean rag.**
3. **Install new seal (38).**
   a. Apply thin coat of adhesive to completely cover fairing surface (37) and all seal surfaces (38). Use adhesive sealant (E12).
   b. Aline and join surfaces of new seal (38) and fairing (37).
   c. Maintain contact pressure on seal with C-clamps (39) and small strips of wood (40).
   d. Make sure adhesive squeezeout (41) is visible at all edges. Remove squeezeout (41) to form a smooth, no-gaps bead on edges.
   e. Apply even bead of adhesive on corners (42).

NOTE

Adhesive sealant (E12) cures to tack free surface in 45 minutes.



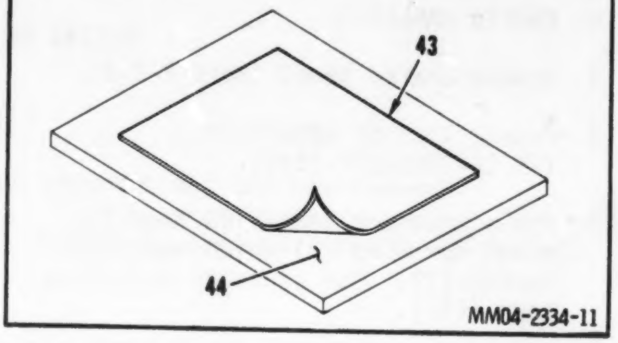
MM04-2334-9



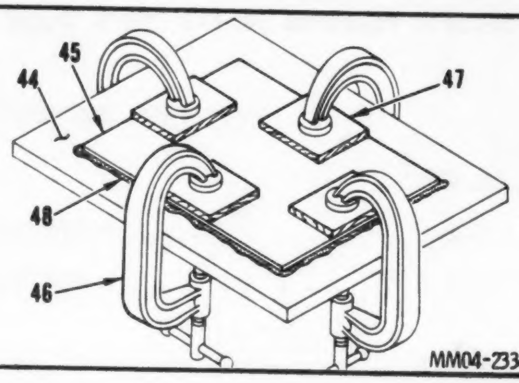
MM04-2334-10

GO TO NEXT PAGE

G. DEBONDED STIFFENERS



MM04-2334-11



MM04-2334-12

1. **Remove debonded stiffener (43).**

   a. Peel off and discard old stiffener (43).

   WARNING

   MEK is highly flammable and toxic. Use in a well-ventilated area and away from open flames. Breathing vapors could cause dizziness. If MEK comes in contact with eyes or skin, flush with water. If contact with eyes or dizziness occurs, seek medical aid.

   b. Remove old adhesive from fairing surface (44). Use MEK (E22). Wear goggles, air filtering respirator, rubber gloves, and impermeable apron.

2. **Wipe stiffener and fairing surfaces with a clean rag.**

3. **Install new stiffener (45).**

   a. Apply thin coat of adhesive sealant to completely cover fairing surface (44) and all stiffener surfaces (45). Use sealant (E12).

   b. Aline and join surfaces of new stiffener (45) and fairing (44).

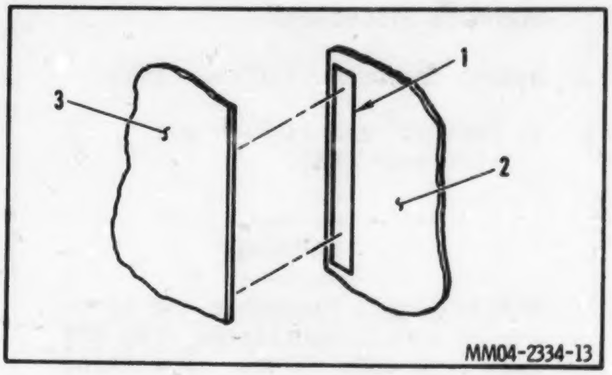
   c. Maintain contact pressure on stiffener with C-clamps (46) and small strips of wood (47). Apply weight in center section of stiffener.

   d. Make sure adhesive squeezeout (48) is visible at all edges. Remove squeezeout (48) to form a smooth, no-gaps bead on edges.

NOTE

Adhesive sealant (E12) cures to tack free surface in 45 minutes.

GO TO NEXT PAGE



H. CHAFED PANELS

1. Remove chafed panel (para 2-2-2).
2. Repair loss of materials (TM 55-1500-204-25/1).
3. Apply pressure sensitive tape to metal surfaces (2) which mate with fabric (3). Use pressure sensitive tape (E62).
4. Install repaired panels (para 2-2-2).

END OF TASK

CHAPTER 3

LANDING GEAR SYSTEM

CHAPTER OVERVIEW

Chapter 3 contains description, operation information, and maintenance instructions for the landing gear system. Landing gear troubleshooting information is in TM 55-1520-238-T. The chapter is divided into the following sections:

CHAPTER INDEX

Section I - LANDING GEAR SYSTEM DESCRIPTION AND OPERATION

Para Title	Para No.
Landing Gear System Description and Operation	3-1-1
Main Landing Gear Description and Operation	3-1-2
Main Landing Gear Trailing Arms Description and Operation	3-1-3
Main Landing Gear Shock Strut Description and Operation	3-1-4
Main Landing Gear Wheel and Tire Description and Operation	3-1-5
Tail Landing Gear Description and Operation	3-1-6
Tail Landing Gear Trailing Arms Description and Operation	3-1-7
Tail Landing Gear Shock Strut Description and Operation	3-1-8
Tail Landing Gear Fork, Wheel, Tire, and Axle Description and Operation	3-1-9
Tail Landing Gear Lock Actuator Description and Operation	3-1-10
Main Landing Gear Brake System Description and Operation	3-1-11
Main Landing Gear Brake Master Cylinders Description and Operation	3-1-12

CHAPTER INDEX (cont)

Para Title . . . Para No.

Main Landing Gear Brake Transfer Valve Description and Operation 3-1-13

Main Landing Gear Parking Brake Description and Operation 3-1-14

Main Landing Gear Brake Description and Operation 3-1-15

Section II - MAIN LANDING GEAR MAINTENANCE

Main Landing Gear Inspection 3-2-1

Main Landing Gear Static Ground Cable Replacement 3-2-2

Main Landing Gear Step Removal/Installation 3-2-3

Main Landing Gear Jack/Tow Pad Adapter Removal/Installation 3-2-4

Main Landing Gear Eight-Bolt Wheel Valve Replacement 3-2-5

Main Landing Gear Eight-Bolt Wheel and Tire Removal 3-2-6

Main Landing Gear Wheel and Tire Installation 3-2-7

Main Landing Gear Eight-Bolt Wheel Tire Removal 3-2-8

Main Landing Gear Eight-Bolt Wheel Tire Installation 3-2-9

Main Landing Gear Wheel Bearing Replacement 3-2-10

Bearing Packing 3-2-11

Main Landing Gear Trailing Arm Removal 3-2-12

Main Landing Gear Trailing Arm Installation 3-2-13

Main Landing Gear Squat Switch Target and Bracket Disassembly/Assembly 3-2-14

Main Landing Gear Shock Strut Removal 3-2-15

Main Landing Gear Shock Strut Installation 3-2-16

Main Landing Gear Shock Strut Air Valve Replacement 3-2-17

Upper Main Landing Gear Shock Strut External Leakage Repair 3-2-18

Main Landing Gear Shock Strut Cylinder External Leakage Repair 3-2-19

CHAPTER INDEX (cont)

Para Title — Para No.

Main Landing Gear Shock Strut Check Valve Removal/Installation 3-2-20

Main Landing Gear Shock Strut Upper Rod End Replacement (AVIM) 3-2-21

Main Landing Gear Shock Strut Upper Gland Seal Replacement (AVIM) 3-2-22

Main Landing Gear Nine-Bolt Wheel Valve Replacement 3-2-23

Main Landing Gear Nine-Bolt Wheel Tire Removal 3-2-24

Main Landing Gear Nine-Bolt Wheel Tire Installation 3-2-25

Section III - TAIL LANDING GEAR MAINTENANCE

Tail Landing Gear Inspection 3-3-1

Tail Landing Gear Proximity Switch Replacement 3-3-2

Tail Landing Gear Lock Actuator Handle Replacement 3-3-3

Tail Landing Gear Lock Actuator Target Replacement 3-3-4

Tail Landing Gear Lock Actuator Fuse Pin Replacement 3-3-5

Tail Landing Gear Lock Actuator Removal/Installation 3-3-6

Tail Landing Gear Lock Actuator Spring Replacement (AVIM) 3-3-7

Tail Landing Gear Wheel (With Grease Fitting) and Axle Removal 3-3-8

Tail Landing Gear Wheel (With Grease Fitting) and Axle Installation 3-3-9

Tail Landing Gear Wheel (With Grease Fitting), Tire, and Tube Removal 3-3-10

Tail Landing Gear Wheel (With Grease Fitting), Tire, and Tube Installation 3-3-11

Tail Landing Gear Wheel (With Grease Fitting) Bearing Removal/Installation 3-3-12

CHAPTER INDEX (cont)

Para Title	Para No.
Bearing Packing	3-3-13
Tail Landing Gear Fork Removal	3-3-14
Tail Landing Gear Fork Installation	3-3-15
Tail Landing Gear Upper Cam Housing Repair	3-3-16
Tail Landing Gear Trailing Arms Removal	3-3-17
Tail Landing Gear Trailing Arms Installation	3-3-18
Tail Landing Gear Shock Strut Removal/Installation	3-3-19
Tail Landing Gear Shock Strut Piston Removal/Installation (AVIM)	3-3-20
Tail Landing Gear Shock Strut Charging Valve Removal/Installation	3-3-21
Tail Landing Gear Wheel (Without Grease Fitting) and Axle Removal	3-3-22
Tail Landing Gear Wheel (Without Grease Fitting) and Axle Installation	3-3-23
Tail Landing Gear Wheel (Without Grease Fitting) Tire and Tube Removal	3-3-24
Tail Landing Gear Wheel (Without Grease Fitting) Tire and Tube Installation	3-3-25
Tail Landing Gear Wheel (Without Grease Fitting) Bearing Removal/Installation	3-3-26

Section IV - BRAKE SYSTEM MAINTENANCE

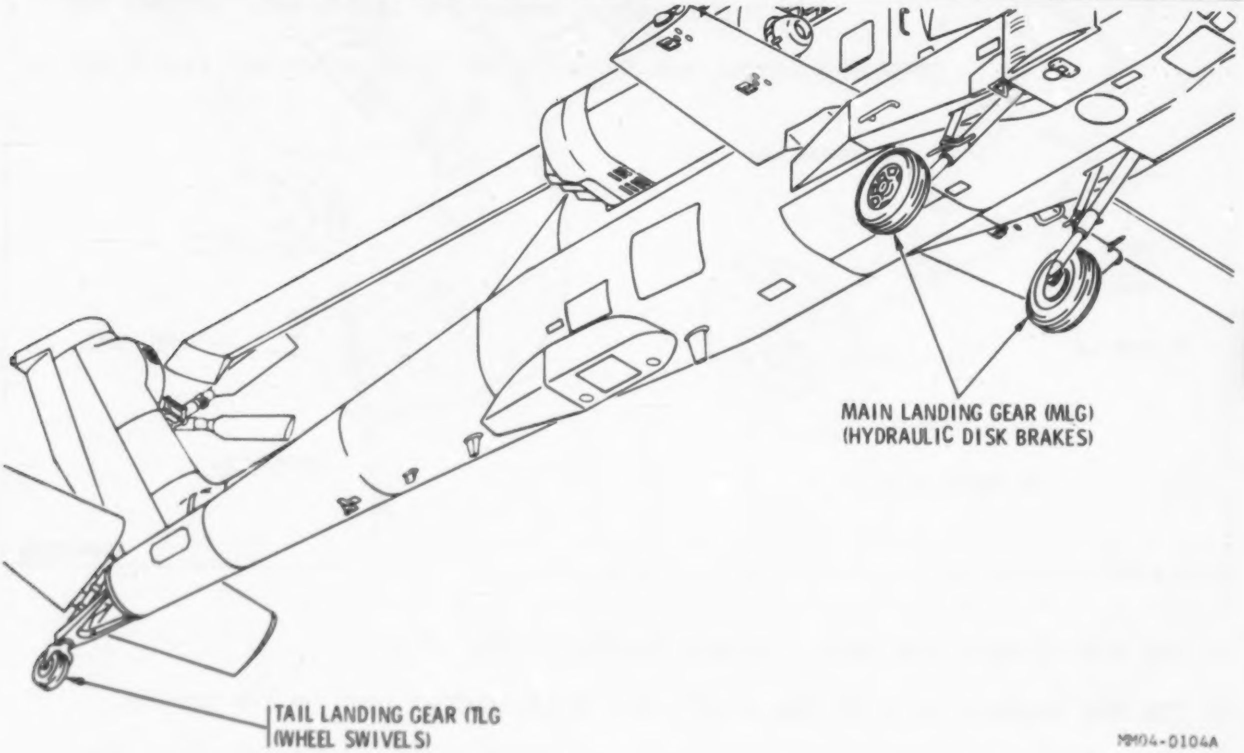
Para Title	Para No.
Brake System Inspection	3-4-1
Parking Brake Valve Removal/Installation	3-4-2
Transfer Valves Removal/Installation	3-4-3
Parking Brake Cable and Control Support Lower Bracket Removal/Installation	3-4-4
Pilot Brake Master Cylinder Removal/Installation	3-4-5

CHAPTER INDEX (cont)

Para Title	Para No.
Pilot Brake Hose Removal/Installation	3-4-6
Copilot/Gunner Brake Hose Removal/Installation	3-4-7
Copilot/Gunner Brake Master Cylinders Removal	3-4-8
Copilot/Gunner Brake Master Cylinders Installation	3-4-9
Wheel Brake, Friction Lining, Brake Disk, and Piston Removal	3-4-10
Wheel Brake, Friction Lining, Brake Disk, and Piston Installation	3-4-11
Main Landing Gear Wheel Brake Hose Removal/Installation	3-4-12
Repair and Test Brake Transfer Valve - Internal Leakage (AVIM)	3-4-13
Parking Brake Master Cylinder - Disassembly/ Assembly (AVIM)	3-4-14
Parking Brake Valve Repair (AVIM)	3-4-15
Wheel Brake, One-Piece Friction Lining, Brake Disk, and Piston Removal	3-4-16
Wheel Brake, One-Piece Friction Lining, Brake Disk, and Piston Installation	3-4-17
Main Landing Gear Wheel Brake Hose (Nonmetallic), Tube, and Clamp Removal/Installation	3-4-18
Main Landing Gear Wheel Brake Tube and Hose Clamp Removal	3-4-19

Section I. LANDING GEAR SYSTEM DESCRIPTION AND OPERATION

3-1-1. LANDING GEAR SYSTEM DESCRIPTION AND OPERATION 3-1-1



A. The landing gear system consists of the main landing gear (MLG) and the tail landing gear (TLG).

B. The landing gear system supports the helicopter for all ground operations; such as landing, taxiing, and parking.

C. The two wheels and their support parts make up the MLG.

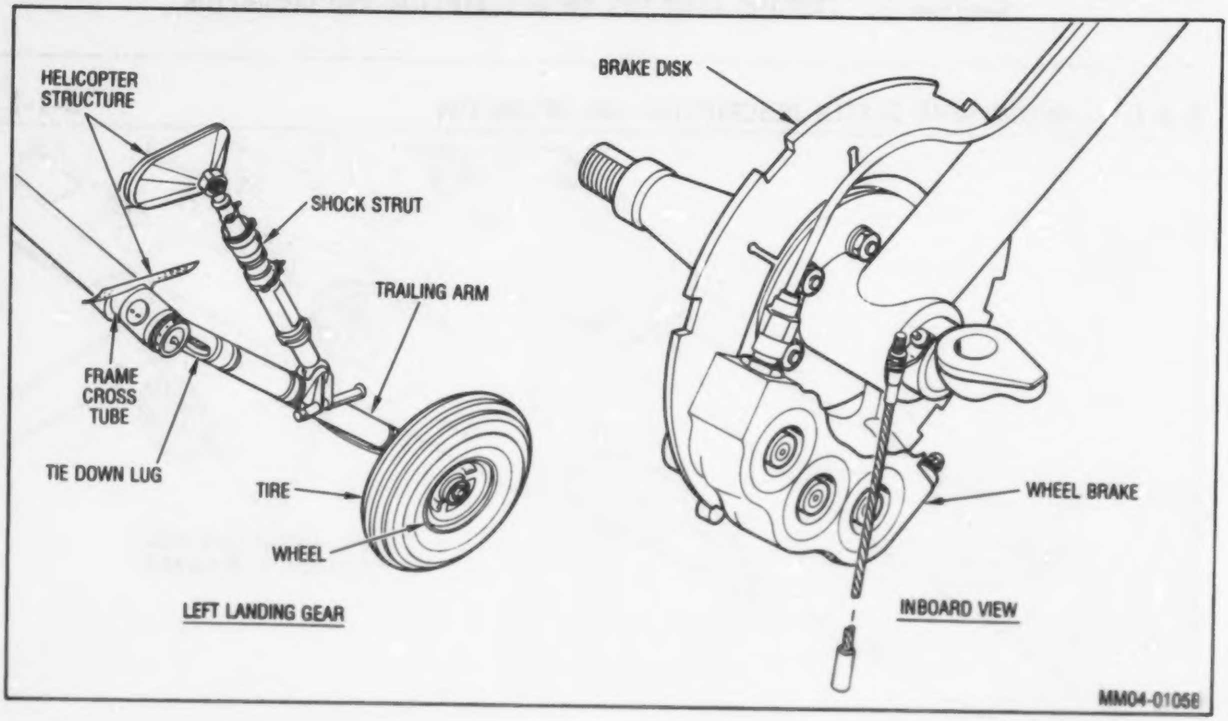
D. The single tailwheel and its support parts make up the TLG.

E. The landing gear system does not retract. The MLG can be kneeled, however, for transporting the helicopter.

F. The MLG has hydraulically operated disk brakes for stopping, parking, and steering on the ground.

G. The TLG wheel swivels for ground steering.

3-1-2. MAIN LANDING GEAR DESCRIPTION AND OPERATION 3-1-2



A. The MLG is under the main fuselage forward of the wings.

B. The MLG supports most of the weight of the helicopter when on the ground.

C. Each main gear consists of a trailing arm, shock strut, wheel and tire, and disk brake.

D. The upper end of the trailing arms is attached to the frame cross tube in the lower fuselage structure.

E. The trailing arms transfer landing loads to the fuselage structure.

F. The shock struts are attached to the trailing arms and fittings on the fuselage structure.

G. The shock struts cushion impact of landing, and transfer landing loads to the trailing arms and fuselage structure.

H. The shock struts also enable the ground crew to kneel (lower) the helicopter for transport.

3-1-2. MAIN LANDING GEAR DESCRIPTION AND OPERATION (cont) 3-1-2

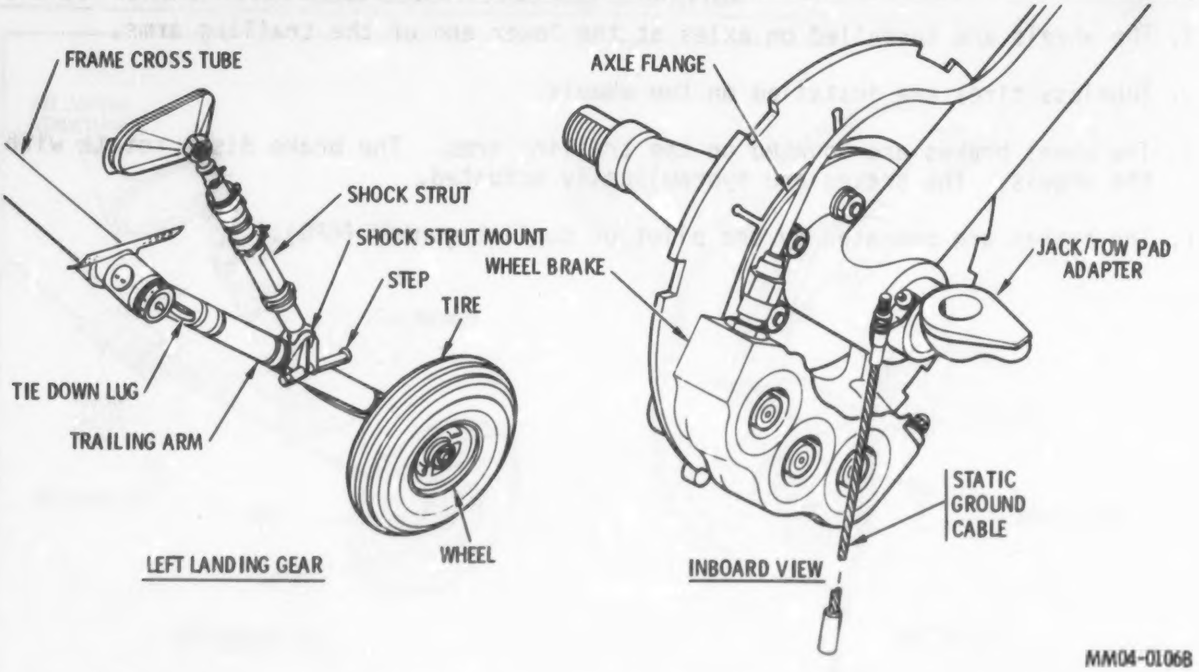
I. The wheels are installed on axles at the lower end of the trailing arms.

J. Tubeless tires are installed on the wheels.

K. The wheel brakes are mounted on the trailing arms. The brake disks rotate with the wheels. The brakes are hydraulically actuated.

L. The brakes are operated by the pilot or copilot/gunner (CPG).

3-1-3. MAIN LANDING GEAR TRAILING ARMS DESCRIPTION AND OPERATION 3-1-3



MM04-0106B

A. The MLG trailing arms are the main supports for the landing gear system.

B. The MLG trailing arms are attached to a frame cross tube installed in the lower section of the fuselage. The trailing arms have free vertical movement on the frame cross tube. The frame cross tube is supported by bearings that allow for flexing of the frame cross tube during landing.

C. The wheels and tires are mounted on axles on the lower end of the trailing arms.

D. A disk brake is installed on the axle flange of the trailing arms.

E. A jack/tow pad adapter is installed on the lower end of each trailing arm. A tiedown lug is at the upper end of each trailing arm.

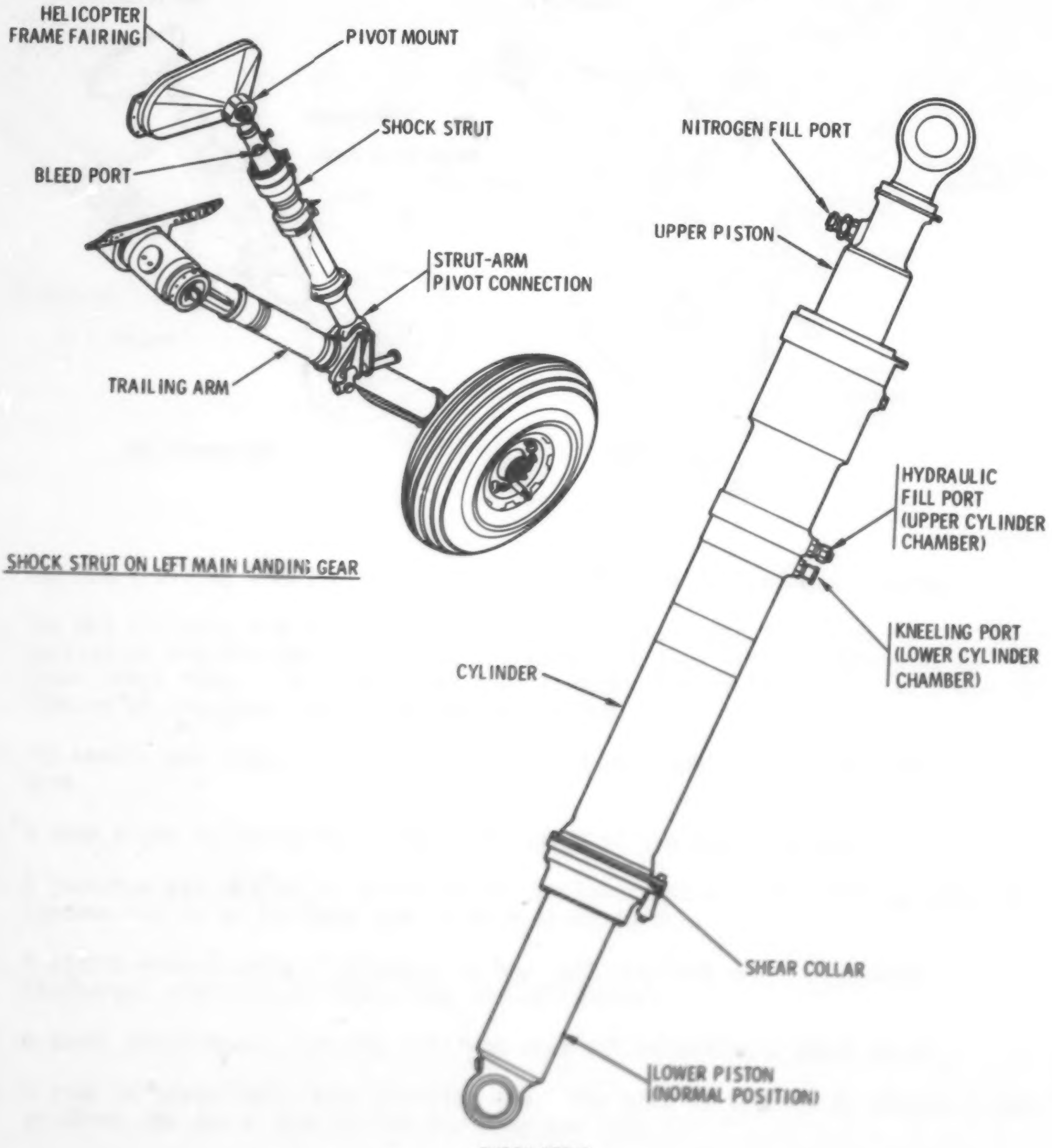
F. A static ground cable is attached to the left trailing arm. The cable discharges static electricity from the helicopter.

G. A shock strut mount is on the trailing arms for attaching a shock strut.

H. A step is installed on each trailing arm. The step is secured by hardware that attaches the shock strut to the trailing arm lugs.

I. The trailing arms rotate on the frame cross tube to allow the shock struts to extend and compress.

3-1-4. MAIN LANDING GEAR SHOCK STRUT DESCRIPTION AND OPERATION 3-1-4


HELICOPTER FRAME FAIRING
PIVOT MOUNT
SHOCK STRUT
BLEED PORT
STRUT-ARM PIVOT CONNECTION
TRAILING ARM
NITROGEN FILL PORT
UPPER PISTON
HYDRAULIC FILL PORT (UPPER CYLINDER CHAMBER)
KNEELING PORT (LOWER CYLINDER CHAMBER)
CYLINDER
SHEAR COLLAR
LOWER PISTON (NORMAL POSITION)

SHOCK STRUT ON LEFT MAIN LANDING GEAR

SHOCK STRUT

MM04-0107A

3-1-4. MAIN LANDING GEAR SHOCK STRUT DESCRIPTION AND OPERATION (cont) 3-1-4

A. The MLG shock strut consists of two pistons inside a cylinder.

B. The upper piston of the shock strut pivot-mounts to a fitting on the fuselage structure. The lower piston is attached to lugs on the trailing arm.

C. The shock strut uses nitrogen and hydraulic fluid to cushion landings.

D. Nitrogen, compressed by hydraulic fluid in the upper piston, serves as a spring to slow upper piston action. The rate of flow of hydraulic fluid in the piston and cylinder is controlled by valves in the upper piston. This allows the upper piston to work as a shock absorber for normal takeoff, landing, and taxiing.

E. The slow-moving upper piston prevents the MLG from dropping too fast on takeoff.

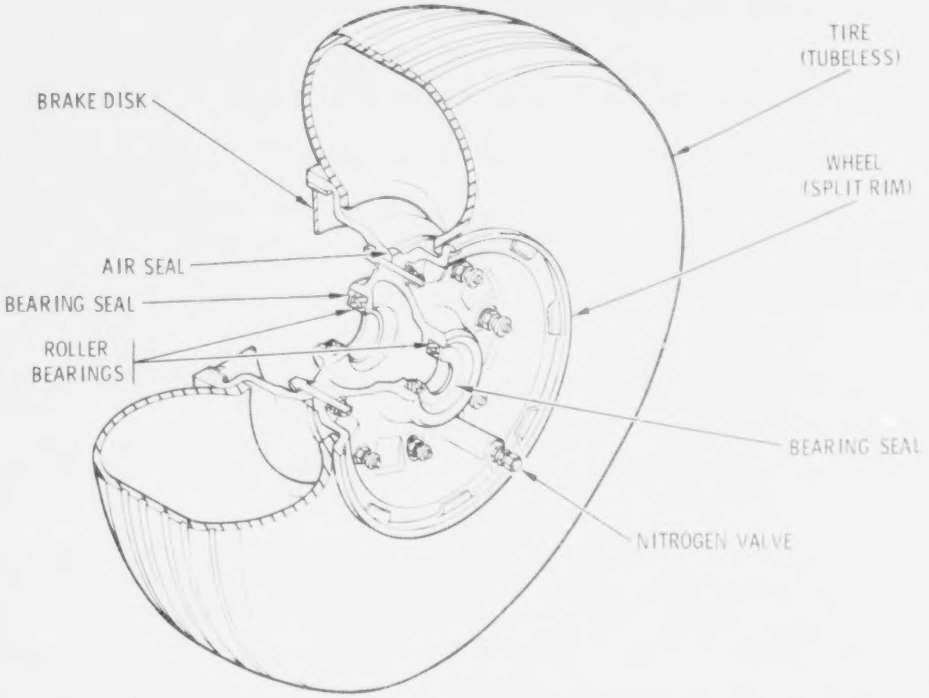
F. The shock strut lower piston is held in the extended position by a shear collar.

G. An extremely hard landing will cause the shear collar to break the shear lugs on the lower piston. This will allow the lower piston to enter the lower chamber of the cylinder. The hydraulic fluid in the chamber slows the piston action by activating valves in the lower piston.

H. The shear collar can be unlocked by the ground crew. Unlocking the shear collar allows the lower piston to enter the lower chamber of the cylinder. The upward movement of the piston will kneel (lower) the helicopter for transport. A kneeling/erecting kit must be connected to the shock struts to unlock the shear collar and kneel or erect the main landing gear.

I. Fill and bleed ports are in the cylinder and upper piston for hydraulic fluid and nitrogen servicing. A port is also provided in the cylinder for connecting the kneeling/erecting kit.

3-1-5. MAIN LANDING GEAR WHEEL AND TIRE DESCRIPTION AND OPERATION 3-1-5



A. Two MLG wheels and tires support most of the helicopter weight when on the ground.

B. The MLG wheels are installed on axles at the lower end of the MLG trailing arms.

C. The MLG wheels are split-rim type.

D. The wheel halves bolt together, and have a seal between the halves.

E. Tapered roller bearings in each wheel provide free wheel rotation on the trailing arm axles.

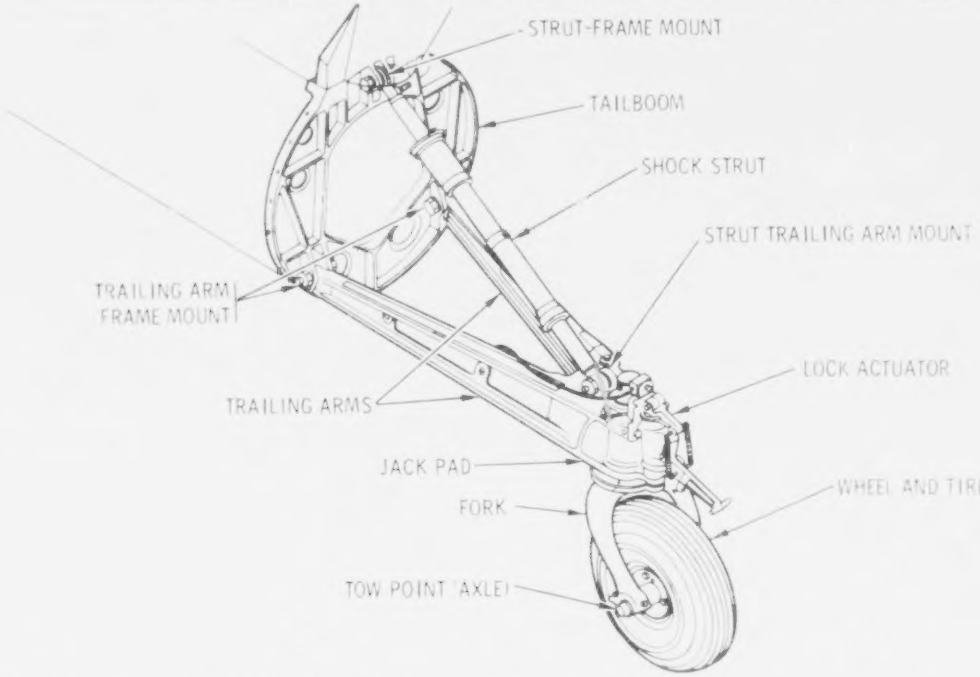
F. Tubeless tires are installed on the wheels.

G. The tires help cushion the helicopter during landing and taxiing.

H. The MLG wheels are equipped with nitrogen charge valves for inflating or deflating the tires.

I. The brakes disk mate with lugs on the wheel. The brakes provide for stopping and parking on the ground and assist steering during taxiing.

3-1-6. TAIL LANDING GEAR DESCRIPTION AND OPERATION 3-1-6



A. The TLG supports the helicopter tail boom.

B. The TLG consists of trailing arms, shock strut, fork and axle, tailwheel lock actuator, wheel, and tire.

C. The trailing arms, attached to the tail boom structure, are the main support of the TLG. The arms absorb forward and side loads during landing and taxiing, and transfer these loads to the tail boom structure.

D. The shock strut cushions vertical shocks resulting from normal and hard landings. The upper piston of the shock strut attaches to lugs on the tail boom structure. The lower piston attaches to lugs on the trailing arm.

E. The fork is installed in a socket at the art end of the trailing arms. This installation permits the fork to swivel 360 degrees.

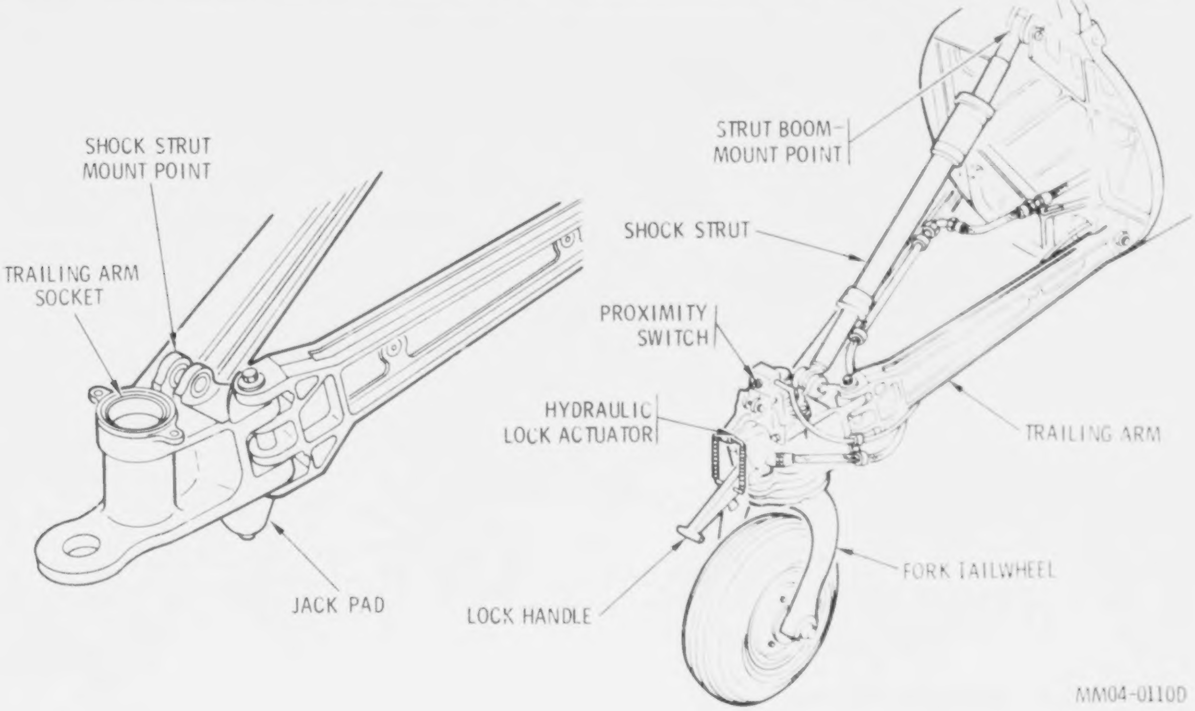
F. The wheel and tire are installed on the axle which is attached to the fork. The free-turning fork enables the tailwheel to swivel 360 degrees during taxiing and towing.

G. The hydraulic lock actuator is installed on the aft side of the trailing arm socket. The actuator locks the tailwheel in center position to prevent swiveling.

H. A jack pad is on the lower surface of the trailing arms. The tailwheel axle is hollow to permit connection of a tow bar.

best copy available

3-1-7. TAIL LANDING GEAR TRAILING ARMS DESCRIPTION AND OPERATION 3-1-7



A. The trailing arms are the main supports of the tail landing gear.

B. The trailing arms are V-shaped. The arms are attached to lugs on the tail boom structure. This attachment allows free vertical movement of the arms.

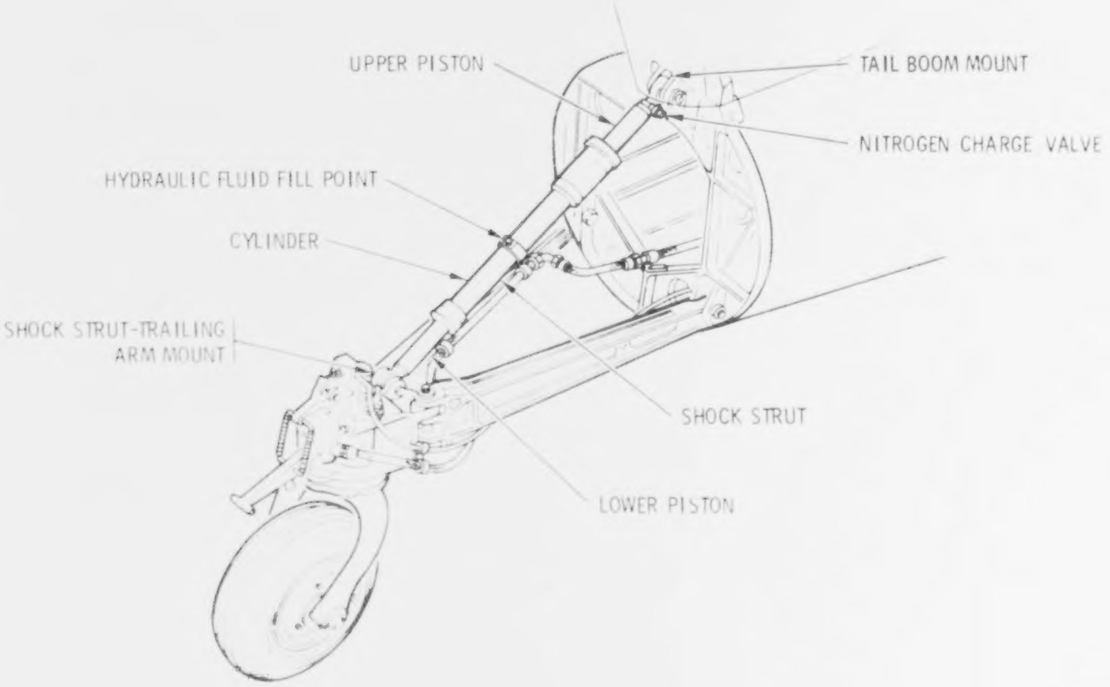
C. The shock strut attaches to lugs on the trailing arms and tail boom structure.

D. The socket in the vee of the trailing arms holds the tailwheel fork.

E. A hydraulic tailwheel lock actuator, handle, and proximity switch (with cockpit indicator) are on the aft side of the trailing arm socket.

F. A jack pad for the tailwheel is on the lower surface of the trailing arms forward of the tailwheel.

3-1-8. TAIL LANDING GEAR SHOCK STRUT DESCRIPTION AND OPERATION 3-1-8



70004-0111-1B

A. The shock strut consists of an upper piston and lower piston inside a cylinder.

B. The shock strut upper piston pivot-mounts to a fitting on the tail boom structure. The lower piston is attached to lugs on the trailing arms.

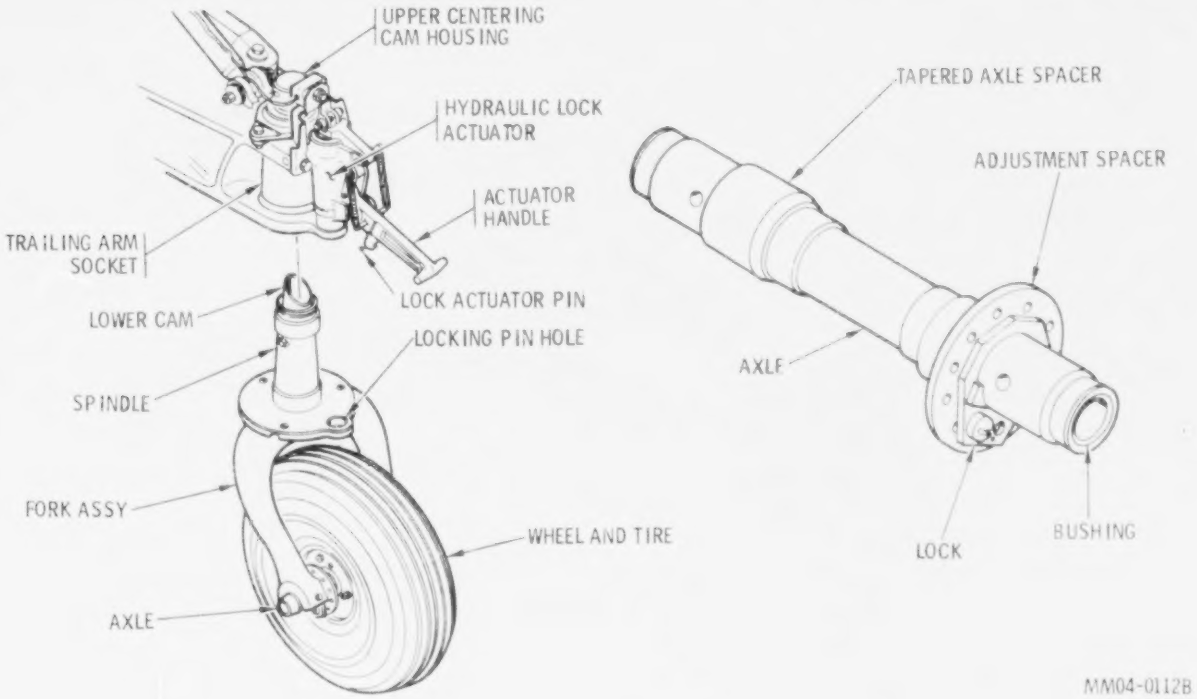
C. The shock strut uses nitrogen and hydraulic fluid to cushion landings.

D. Nitrogen, compressed by hydraulic fluid in the upper piston, serves as a spring to slow upper piston action. The rate of flow of hydraulic fluid in the piston and cylinder is controlled by valves in the upper piston. This allows the upper piston to work as a shock absorber for normal takeoff, landing, and taxiing; and prevents the TLG from dropping too fast during takeoff.

E. Shear pins that secure the lower piston in the cylinder will break during an extremely hard landing. The piston moves up into the cylinder. Hydraulic fluid flowing through an orifice, combined with an elastomeric spring, slows movement of the piston and absorbs the shock of landing.

F. The shock strut has a nitrogen charge valve and a hydraulic fluid fill port.

3-1-9. TAIL LANDING GEAR FORK, WHEEL, TIRE, AND AXLE DESCRIPTION AND OPERATION 3-1-9



A. The wheel and tire permit towing and taxiing. The tire helps cushion impact shock during landing and ground operation.

B. The fork mounts in the socket at the aft end of the trailing arms.

C. The fork spindle rotates in the trailing arm socket to permit the tailwheel to swivel 360 degrees for ground handling.

D. The fork-axle-wheel can be locked in position for takeoff or landing. This can be done by the pilot from the cockpit or by the ground crew at the tail gear.

E. The fork is drilled to accept the hydraulic lock actuator locking pin on the aft end of the trailing arm socket.

F. A spring-loaded cam in the fork and a centering cam on the trailing arm socket will center the tailwheel in the trailing arms when the weight of the helicopter is removed from the TLG. The cams will hold the tailwheel in the center position. This will permit engagement of the lock actuator pin. Go to para 3-1-10 for additional information.

G. The axle mounts in the clevis of the fork. The wheel and tire mount on the axle. Tapered roller bearings held in races provide for free wheel rotation on the axle.

3-1-9. TAIL LANDING GEAR FORK, WHEEL, TIRE, AND AXLE DESCRIPTION AND OPERATION (cont) 3-1-9

H. The axle is a hollow tube with a tapered axle spacer, internally threaded adjustment spacer, and externally threaded lock.

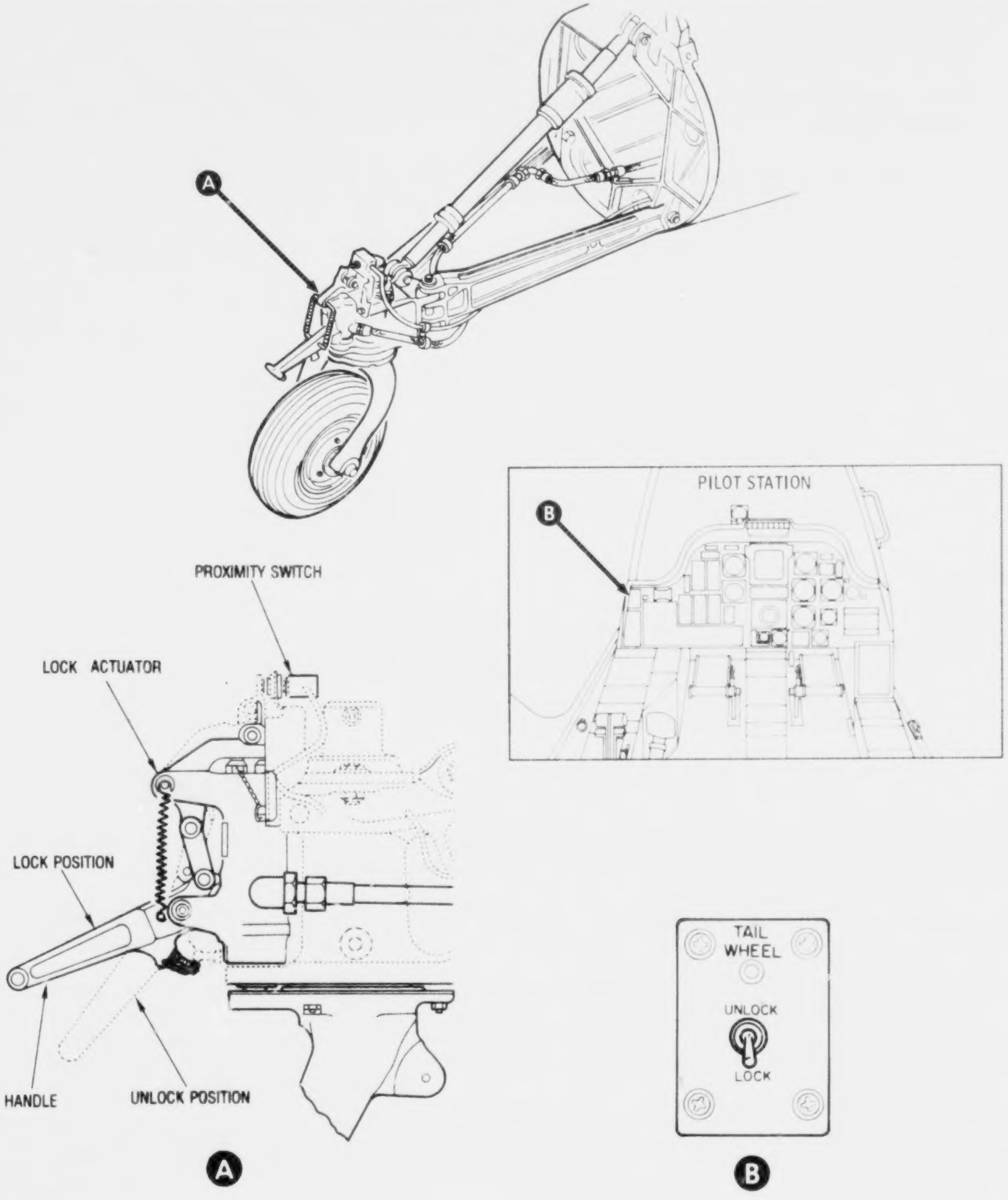
I. Wheel bearing adjustment is done with the adjustment spacer and externally threaded lock.

J. The adjustment spacer threads on the lock. The lock has a flange that keys to the lower fork and prevents the spacer from turning.

K. Bushings in the end of the hollow axle provide points for towbar attachment.

L. The wheel has a inlet valve port for the tube-equipped tire.

3-1-10. TAIL LANDING GEAR LOCK ACTUATOR DESCRIPTION AND OPERATION 3-1-10



MM04-0113C

3-1-10. TAIL LANDING GEAR LOCK ACTUATOR DESCRIPTION AND OPERATION (cont) 3-1-10

A. The TLG lock actuator permits tailwheel travel to be locked in one direction.

B. The lock actuator is controlled from the pilot station. A handle on the actuator lock allows the ground crew to lock or unlock the tailwheel.

C. The unlocked tailwheel will swivel 360 degrees for taxiing and towing.

D. The tailwheel is locked for takeoff, landing, and parking.

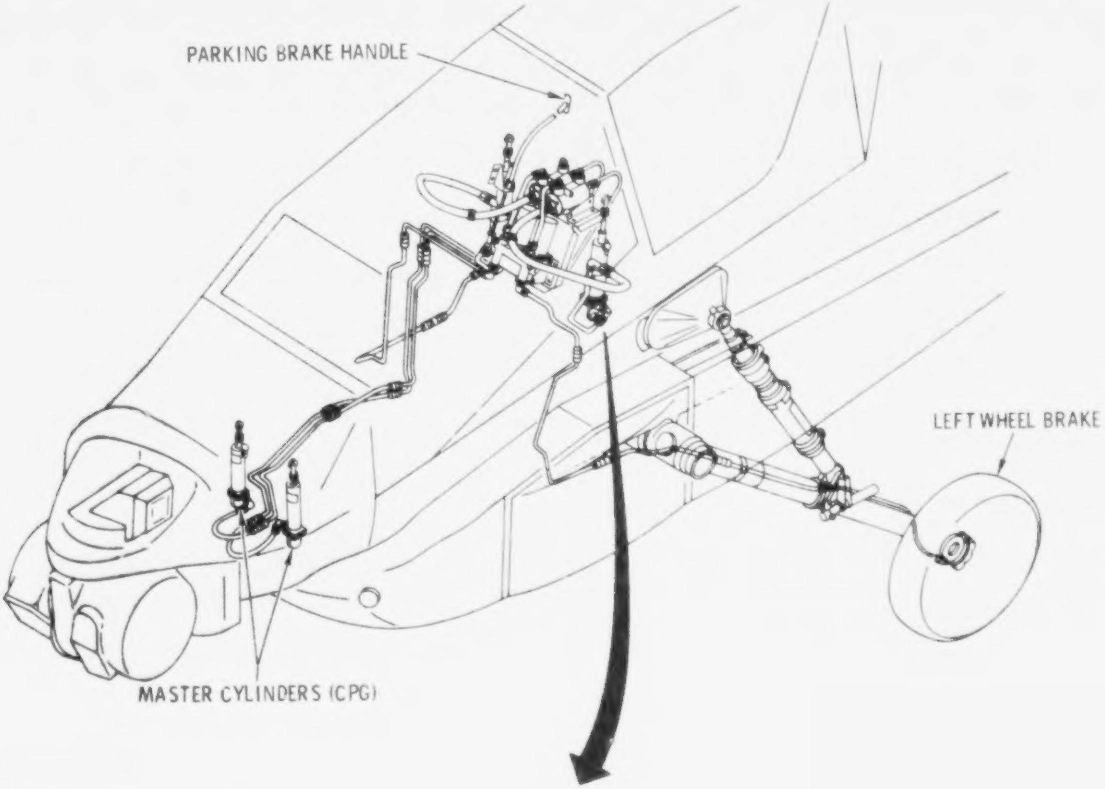
E. The lock actuator, proximity switch, and handle are at the aft end of the trailing arms.

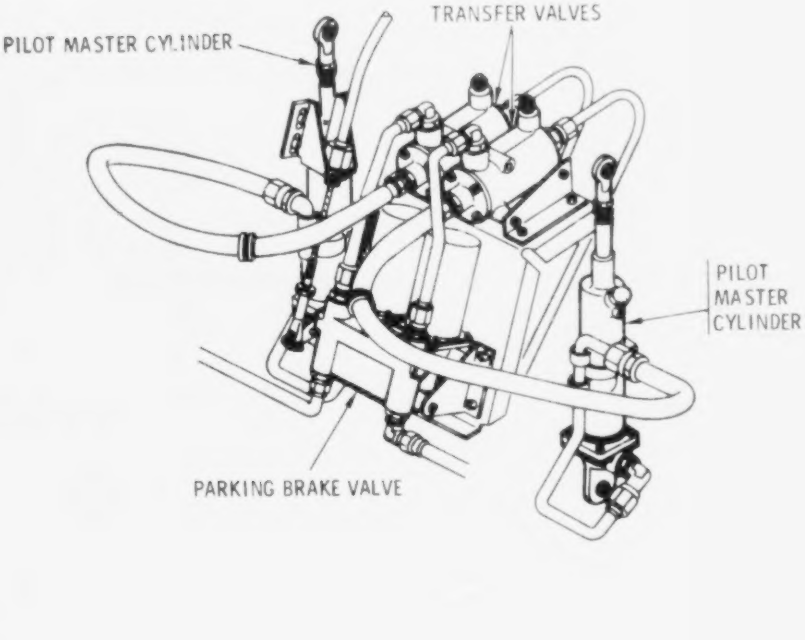
F. The lock actuator is electrically controlled and hydraulically operated.

G. The actuator locking pin (piston) is spring-loaded to the locked position. Hydraulic pressure retracts the tail fork locking pin when the pilot places the actuator switch in the unlocked position. The proximity switch lights on an indicator on the pilot left instrument panel.

H. Hydraulic pressure is shut off when the pilot places the actuator switch in the locked position. The lock pin then returns to the fork, and the cockpit indicator is not lighted.

3-1-11. MAIN LANDING GEAR BRAKE SYSTEM DESCRIPTION AND OPERATION 3-1-11





MM04-0424-1C

3-1-11. MAIN LANDING GEAR BRAKE SYSTEM DESCRIPTION AND OPERATION (cont) 3-1-11

A. The brake system provides braking and parking for the helicopter.

B. The brake system consists of four master cylinders, two transfer valves, a parking brake valve, and two wheel brakes.

C. Master cylinders attached to the helicopter structure are actuated by the pilot or CPG directional control pedals. The left or right brake system is pressurized when either pilot or CPG left or right pedal is pressed.

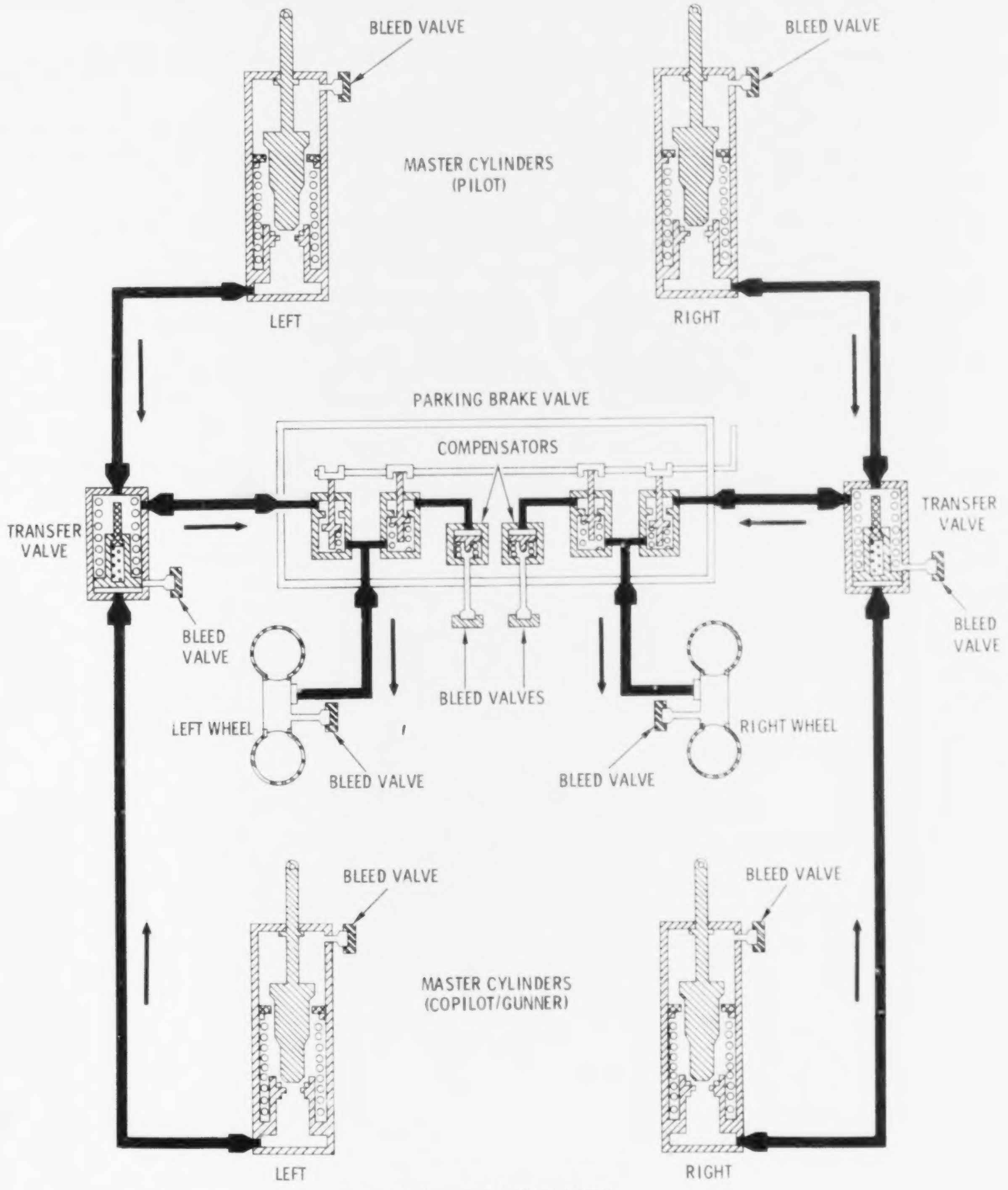
D. Transfer valves in the lower center console work only when the CPG brakes master cylinders are actuated.

E. A parking brake valve is in the lower center console forward below the transfer valves. It locks hydraulic pressure to the wheel brakes.

F. The parking brake valve control handle is on the pilot instrument panel. A cable runs from the parking handle through the center console to the parking brake valve lever.

G. A wheel brake is mounted on each trailing arm axle. Hydraulic pressure, when applied, causes the brake linings to move out and push against the wheel brake disk to stop wheel rotation.

3-1-11. MAIN LANDING GEAR BRAKE SYSTEM DESCRIPTION AND OPERATION (cont) 3-1-11



MAIN LANDING GEAR BRAKE SYSTEM

MM04-0424-2C

3-1-11. MAIN LANDING GEAR BRAKE SYSTEM DESCRIPTION AND OPERATION (cont) 3-1-11

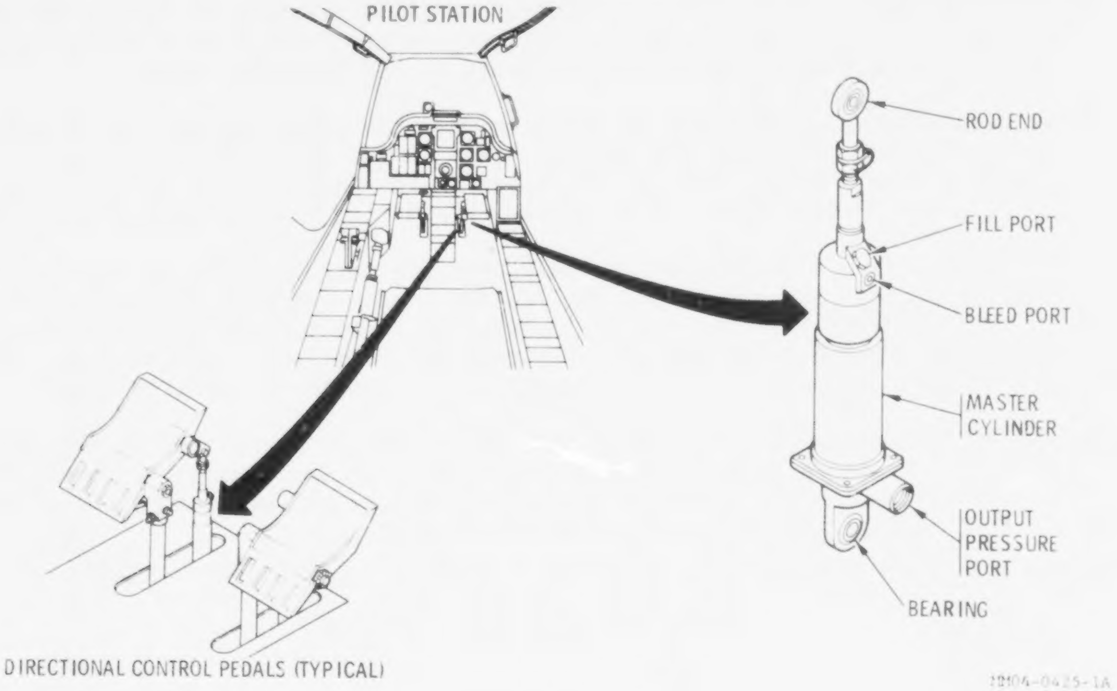
H. When the top of the directional control pedal is pressed, it forces the piston of the brake cylinder downward. This pressurizes the fluid in the cylinder. The pressurized fluid is then transmitted to the transfer valve.

I. The transfer valve performs no function when the brake is operated from the pilot station. A piston pressurizes fluid in the valve when the brake is operated from the CPG station. A poppet on the piston seats to close the pilot inlet port. Pressurized fluid is then transmitted to the parking brake valve.

J. The parking brake valve operates only when the parking brake is set from the pilot station. The brakes are applied and held. The PARK BRAKE handle is pulled and held. Pedal pressure is released. The parking brake will remain set. The parking brake may be released from the pilot or CPG station. Brakes are released by pushing, then releasing, the directional control pedal.

K. Hydraulic pressure from the parking brake valve is transmitted to the brake housing. Pressure is applied to three pistons in the housing. A brake disk rotates between brake friction linings. Pressure on the pistons force the linings against the disk to stop wheel rotation.

3-1-12. MAIN LANDING GEAR BRAKE MASTER CYLINDERS DESCRIPTION AND OPERATION 3-1-12



A. Four brake master cylinders store and supply hydraulic fluid under pressure to operate the brakes.

B. The master cylinder has a movable piston and rod-end at one end, and a fixed bearing mounted to the helicopter structure at the other end.

C. The piston rod ends are attached to the directional control pedals.

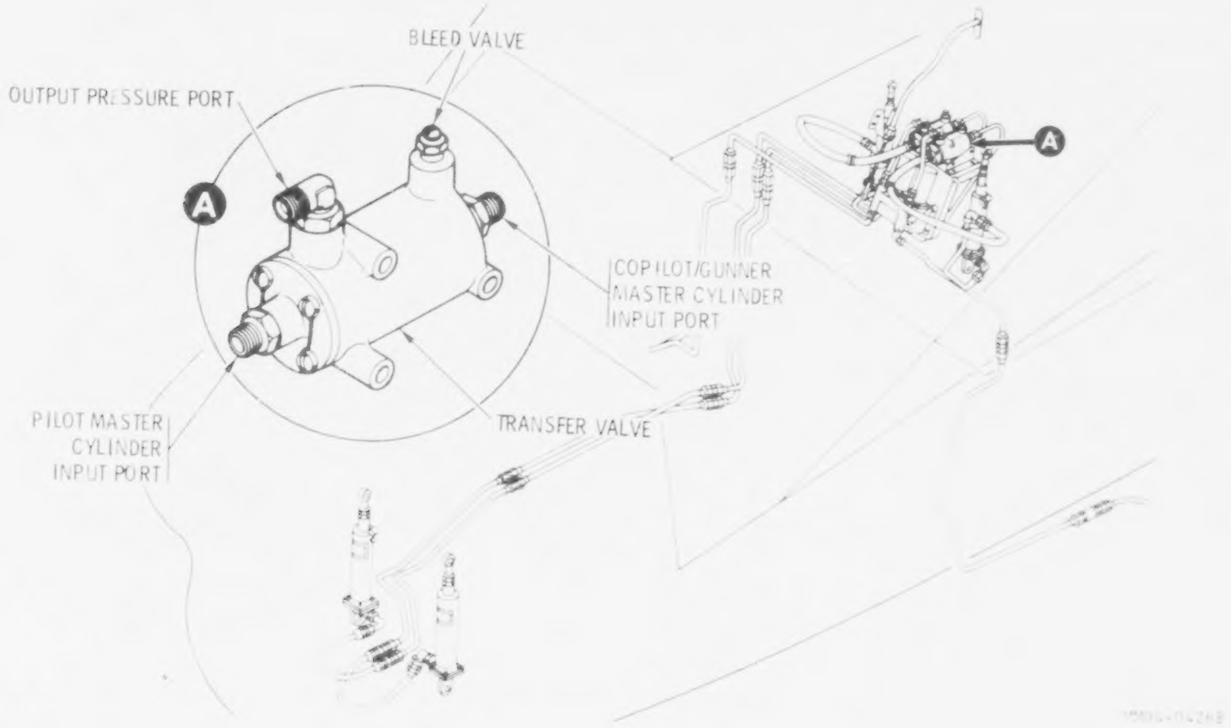
D. The upper or rod end of the cylinder contains a fill port and a bleed port.

E. The lower end of the cylinder contains an output pressure port.

F. The piston rod is forced downward in the cylinder when the directional control pedals are pressed to apply brakes. This action pressurizes the fluid in the brake system.

G. A spring will return the piston rod to the fully extended position when the directional control pedals are released. Hydraulic fluid can flow unrestricted through the cylinder when the rod is fully extended. This ensures that the system is completely unpressurized to prevent brake drag.

3-1-13. MAIN LANDING GEAR BRAKE TRANSFER VALVE DESCRIPTION AND OPERATION 3-1-13


BLEED VALVE
OUTPUT PRESSURE PORT
A
COPILOT/GUNNER MASTER CYLINDER INPUT PORT
PILOT MASTER CYLINDER INPUT PORT
TRANSFER VALVE
A

A. Two identical transfer valves, one for each wheel brake, are on a bracket behind the pilot center instrument panel.

B. Valves separate pilot and CPG hydraulic pressures applied by the master cylinders.

C. Operation of the valves is identical for both brakes.

D. Hydraulic pressure from the pilot master cylinder is applied to the wheel brakes through ports in the transfer valve.

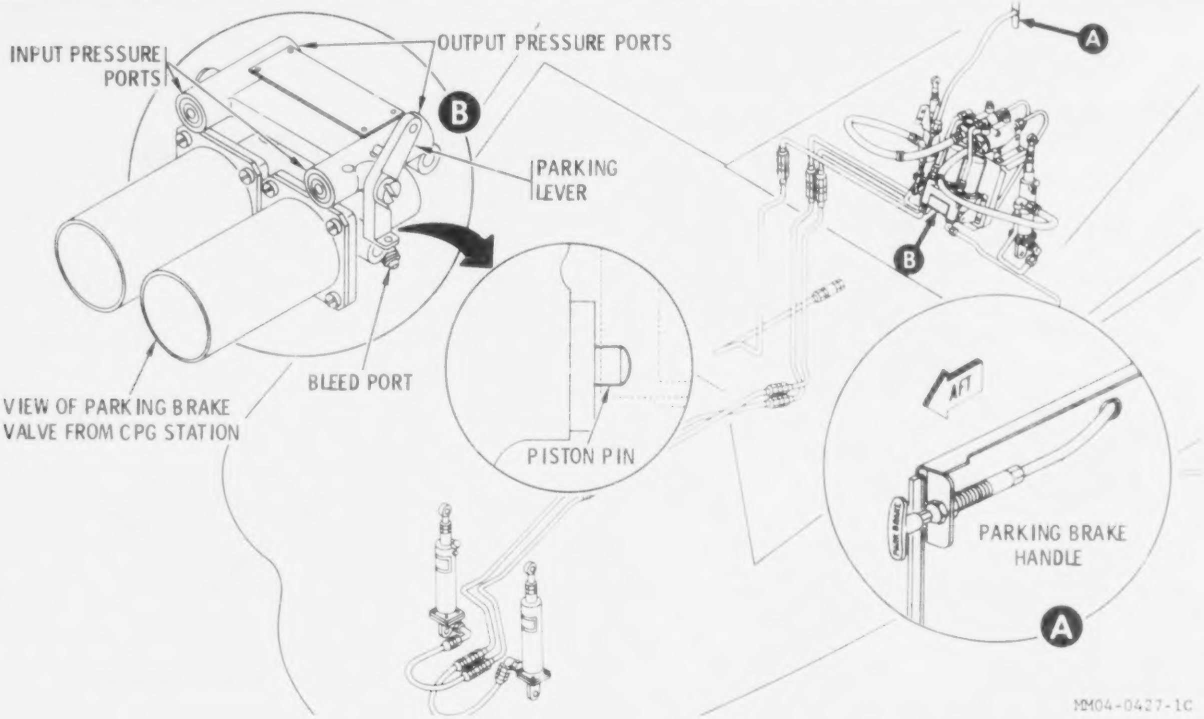
E. Pressure from the CPG master cylinder is applied to a piston in the transfer valve. The piston is forced forward to displace fluid in the housing and apply pressure to the wheel brake.

F. A spring loaded poppet is installed in the end of the piston. The poppet closes the inlet port to the pilot master brake cylinder when pressure is applied by the CPG master cylinder.

G. Pressure may be applied by the pilot master cylinder. This pressure will override the poppet and supply additional pressure to the wheel brake.

H. The valve incorporates a valve for bleeding the CPG brake system.

3-1-14. MAIN LANDING GEAR PARKING BRAKE DESCRIPTION AND OPERATION 3-1-14



A. The parking brake valve is on a bracket forward of the pilot center instrument panel. The valve traps pressure in the brake system to hold pressure at the wheel brakes when actuated.

B. A parking brake handle (PARK BRAKE) is connected by a cable to a lever on the valve to allow the pilot to set the brakes. The parking brakes cannot be set at the CPG station but they can be released.

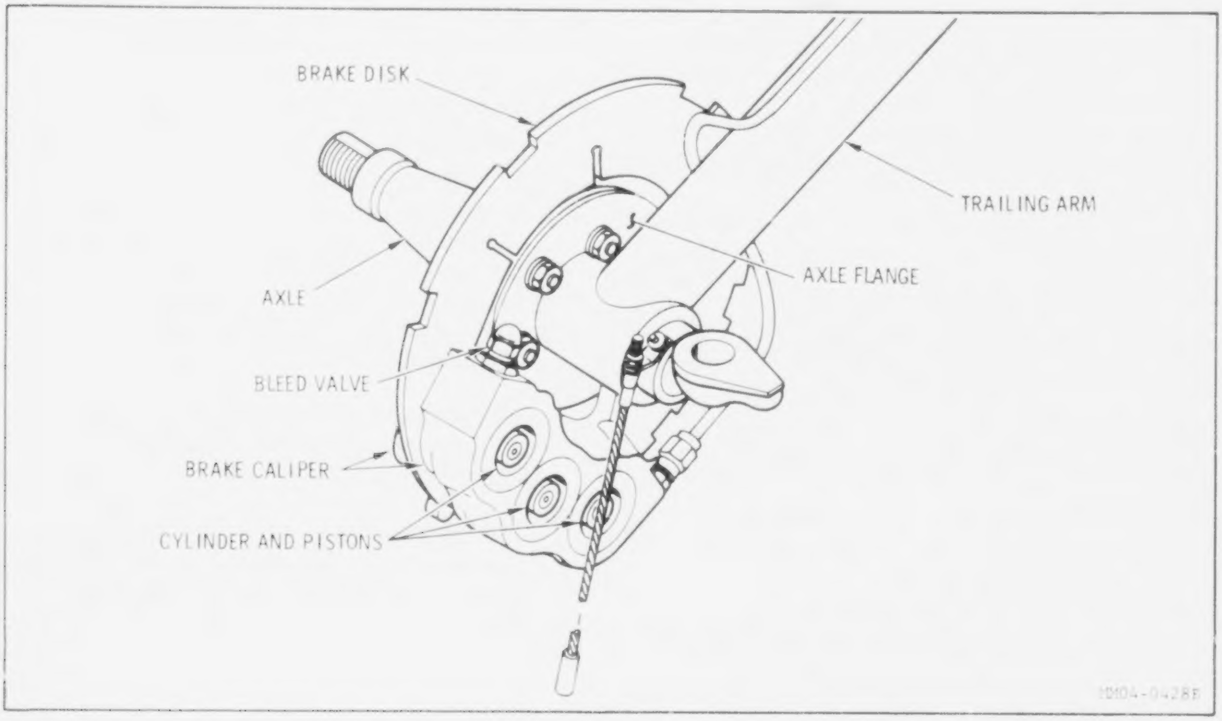
C. Hydraulic fluid is allowed to flow directly to the wheel brakes during normal operation with the parking brake handle in OFF.

D. A lever on the valve is rotated when pressure is applied by the pilot pedals and the PARK BRAKE handle is pulled. This action repositions poppets in the valve to trap pressure between valve and wheel brake.

E. The pedals are released with the PARK BRAKE handle held in the extended position. A spring loaded piston pin in the valve will extend to hold the valve lever and PARK BRAKE handle in the park position.

F. The brakes are released by applying pressure to the pedals from either the pilot or CPG stations. The parking piston pin will retract when pressure is applied. Spring force will return the valve lever and parking brake handle to the off position.

3-1-15. MAIN LANDING GEAR BRAKE DESCRIPTION AND OPERATION 3-1-15



A. A disk brake is provided for each MLG wheel. Each brake consists of a caliper and a disk.

B. The caliper for each wheel is on the flange of the trailing arm. The disk is in the wheel, and rotates in the caliper.

C. Six friction linings are installed on each caliper. Three of the linings are installed on pistons in the caliper housing. The other three linings are attached to the opposite (anvil) side of the caliper.

D. When hydraulic pressure is applied to the brakes, the pistons, with the linings attached, are forced against the disk. The disk, which floats in the wheel, moves with the piston linings against the linings installed on the anvil. This action, depending on the pressure applied, slows or stops wheel rotation.

Section II. MAIN LANDING GEAR MAINTENANCE

3-2-1. MAIN LANDING GEAR INSPECTION 3-2-1

A. MAIN LANDING GEAR

1. Check components for damage and loose mounting.
2. Check for loose, missing, or damaged mounting hardware.
3. Check static ground cable for wear, chafing, or looseness.
4. Check trailing arms for cracks, looseness, or misalinement.
5. Check tires for tread damage or uneven wear (TM 55-2520-200-24).
6. Check wheels for cracks, deformation, or hub grease leakage.
7. Check wheel keys for wear. Minimum width: 0.842-INCH.
8. Check squat switch and wiring for cracked, broken, or burned insulation. Check switch bracket and target for looseness or misalinement.
9. Check shock struts for external fluid leakage and for rod end cracks, looseness, or misalinement (TM 55-1500-204-25/1).
10. Check pivot landing gear bolts for broken torque stripe.
11. Check bore of main landing mounts for corrosion. Remove corrosion. Ensure that inside diameter of bore does not exceed 0.940-INCH after removal of corrosion (para 1-5-38).

B. GENERAL (FITTINGS, CASTINGS, FORGINGS)

1. Nicks, scratches, and gouges which do not develop into cracks are generally acceptable if sharp edges can be blended and damage does not interfere with operational characteristics of the affected components.
2. Remove minimal material to smooth off sharp edges if blending is required.
3. Cracks are generally not acceptable. Use approved nondestructive testing methods to determine if cracks exist.

END OF TASK

3-2-2. MAIN LANDING GEAR STATIC GROUND CABLE REPLACEMENT 3-2-2

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

(E8) Lockwire

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

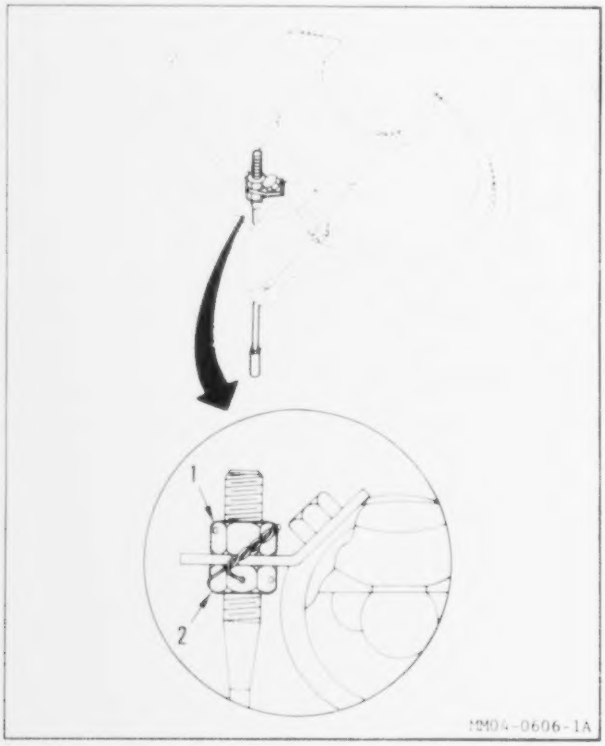
References:

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. Remove lockwire from nuts (1) and (2).



GO TO NEXT PAGE

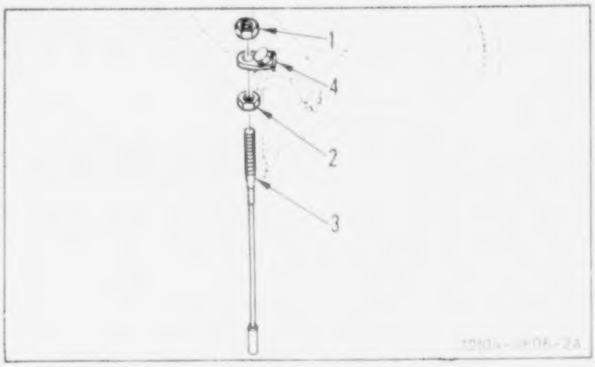
3-2-2. MAIN LANDING GEAR STATIC GROUND CABLE REPLACEMENT (cont) 3-2-2

2. **Remove ground cable (3).**

   a. Hold nut (2). Remove nut (1).

   b. Remove cable (3) from bracket (4).

   c. Remove nut (2) from cable (3).



B. INSTALLATION

1. **Install ground cable (3) on bracket (4).**

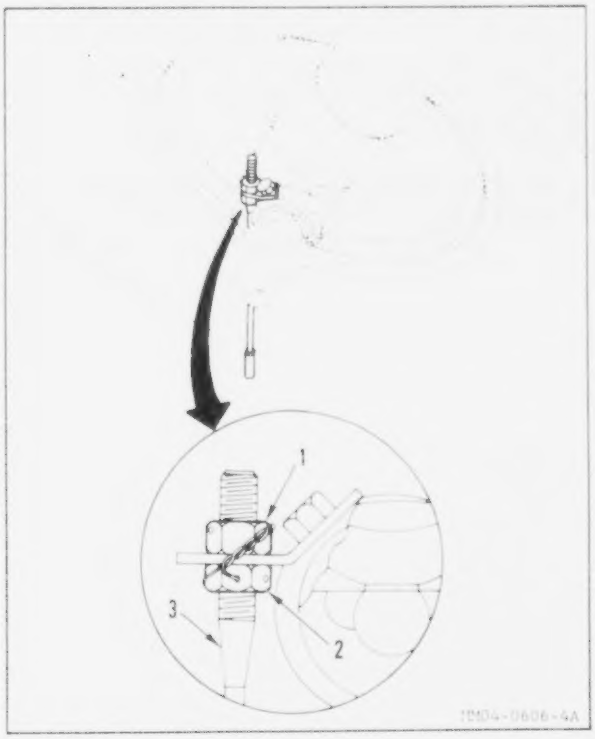
   a. Install nut (2) on cable (3).

   b. Install cable (3) up through bracket (4).

   c. Install nut (1) on cable (3).

2. **Lockwire nuts (1) and (2) together.** Use lockwire (E8).

3. **Inspect (TI).**



END OF TASK

3-2-3. MAIN LANDING GEAR STEP REMOVAL/INSTALLATION 3-2-3

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Materials/Parts:

	Cotter Pin
(E19)	Primer

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

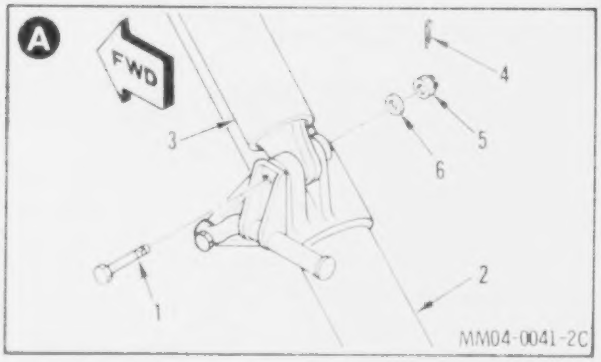
A. REMOVAL

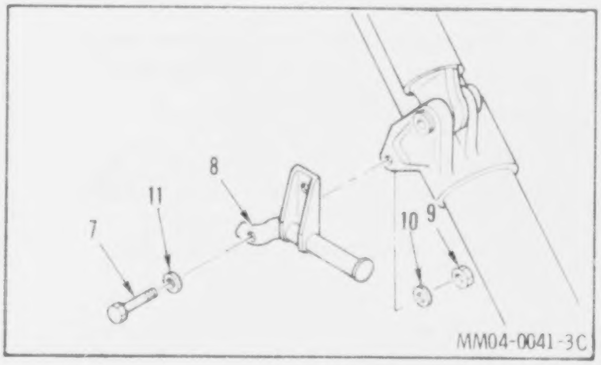
1. **Remove shock strut bolt (1) from trailing arm (2) and shock strut (3).**
   a. Remove and discard cotter pin (4) from bolt (1).
   b. Hold bolt (1). Remove nut (5) and washer (6).
   c. Remove bolt (1).

NOTE

Pin covers may detach when bolt is removed.

2. **Remove step bolt (7) and step (8).**
   a. Hold bolt (7). Remove nut (9) and washer (10).
   b. Remove bolt (7), washer (11), and step (8).





B. CLEANING

Wipe all removed and attaching parts with a clean rag.

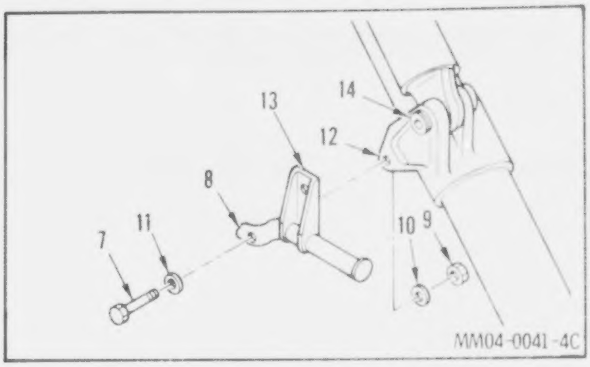
GO TO NEXT PAGE

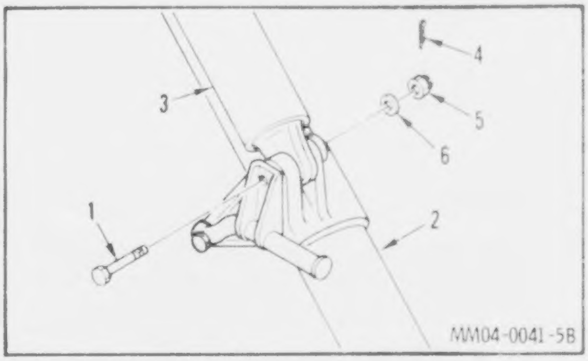
3-2-3. MAIN LANDING GEAR STEP REMOVAL/INSTALLATION (cont) 3-2-3

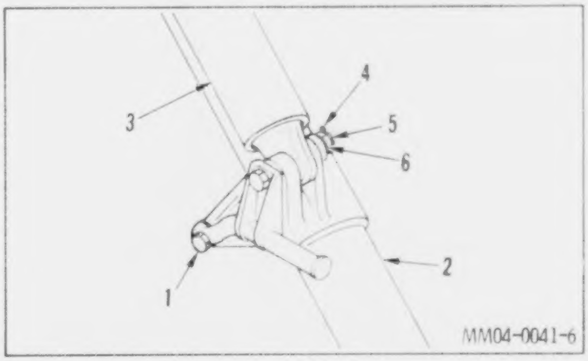
C. INSPECTION

Check mounting point for wear, elongation of holes, and cracks (para 3-2-1).

D. INSTALLATION







1. **Position step (8) on trailing arm (2) and install bolt (7).**
   - a. Aline step (8) with lug (12). Install washer (11), bolt (7), step (8), washer (10), and nut (9). Do not tighten nut (9).
   - b. Position bracket (13) on pin cover (14).
2. **Install bolt (1).** Torque nut (5) **60 to 70 INCH-POUNDS.**
   - a. Coat bolt (1), washer (6), and nut (5) with primer (E19). Install parts before primer dries.
   - b. Install bolt (1).
   - c. Hold bolt (1). Install washer (6) and nut (5).
   - d. Torque nut (5) to **60 INCH-POUNDS.**
   - e. Increase torque to aline cotter pin holes but do not exceed **70 INCH-POUNDS.**
3. **Tighten bolt (7).** Hold bolt (7), torque nut (9) to **50 INCH-POUNDS.**
4. **Install new cotter pin (4) in bolt (1).**
5. **Inspect (TI).**

END OF TASK

3-2-4. MAIN LANDING GEAR JACK/TOW PAD ADAPTER REMOVAL/INSTALLATION 3-2-4

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Materials/Parts:

(E19) Primer

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. **Remove bolt (1) and jack/tow pad adapter (2).** Hold bolt (1). Remove nut (3) and washer (4).

2. **Remove bolt (1), static ground bracket (5) (on left trailing arm), and jack/tow pad adapter (2).**

B. INSTALLATION

1. **Install jack/tow pad adapter (2) in trailing arm (6).** Torque nut (4) to **60 INCH-POUNDS.**

   a. Aline adapter (2) in trailing arm (6).

   NOTE

   Install parts before primer dries.

   b. Coat bolt (1) with primer (E19).

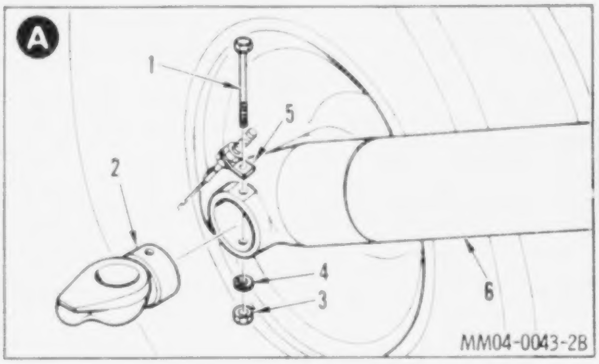
   c. Aline static ground bracket (5) (on left trailing arm).

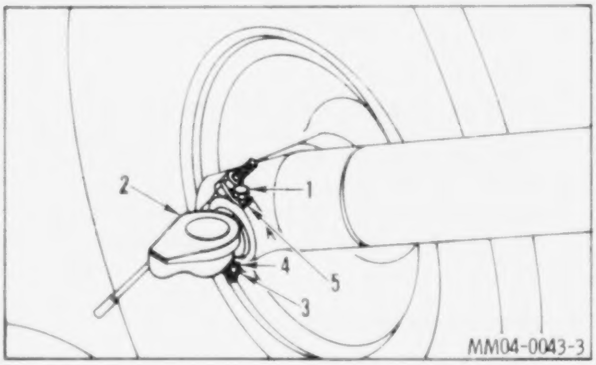
   d. Install bolt (1) through static ground bracket (5) and trailing arm (6).

   e. Hold bolt (1). Install washer (4) and nut (3). Torque nut to **60 INCH-POUNDS.**

2. **Inspect (TI).**

END OF TASK





3-2-5. MAIN LANDING GEAR EIGHT-BOLT WHEEL VALVE REPLACEMENT 3-2-5

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Repair Tool, Pneumatic Tire Valve	5120-00-308-3809
Inflator Assembly, Tire	4920-00-781-8423
Cart, Nitrogen	3655-00-534-0564
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Materials/Parts:

	Packing
(E13)	Hydraulic Fluid
(E18)	Compound, Leak-Detection

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

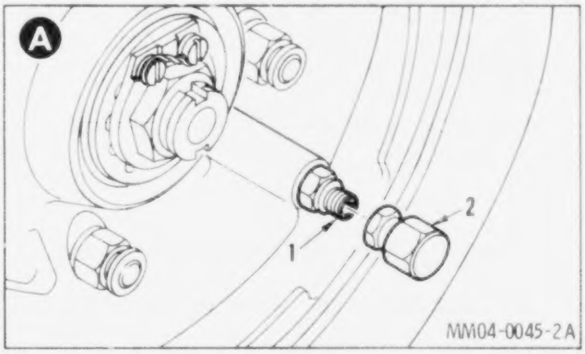
Ref	Condition
1-7-2	Helicopter safed
1-7-13	Wheel jacked (axle jack)

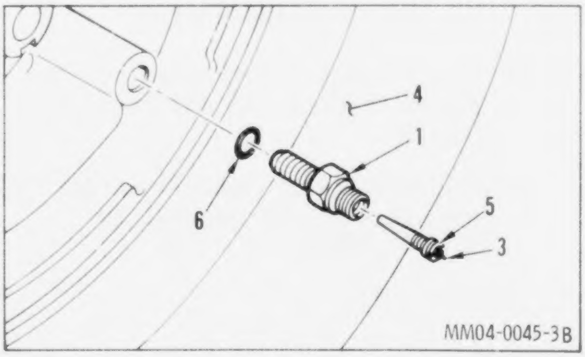
A. REMOVAL

WARNING

Do not remove valve core from valve stem until all nitrogen is out of tire. Pressure on loosened core could cause core to be blown from stem and injure personnel. If injury occurs, seek medical aid.

1. **Remove valve (1).**
   a. Remove valve cap (2).
   b. Press valve core end (3) to deflate tire (4). Remove valve core (5). Use valve repair tool.
   c. Remove valve (1) and packing (6). Discard packing (6).





GO TO NEXT PAGE

3-2-5. MAIN LANDING GEAR EIGHT-BOLT WHEEL VALVE REPLACEMENT (cont) 3-2-5

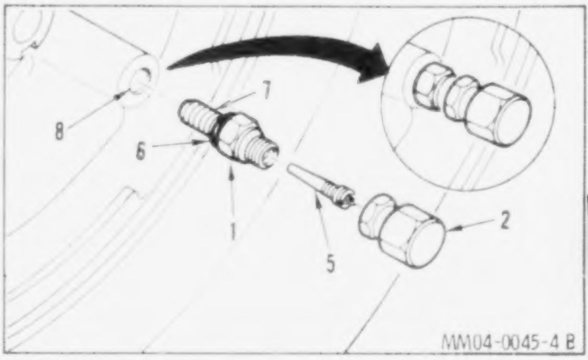
B. CLEANING

Clean lower threads (para 1-5-36).

C. INSPECTION

Check threads and area around hole for cracks and distortions. None allowed.

D. INSTALLATION



1. **Install valve (1).** Torque valve (1) to 60 INCH-POUNDS.
   - a. Lubricate new packing (6) and threads (7) of valve (1). Use hydraulic fluid (E13).
   - b. Install packing (6) on valve (1).
   - c. Install valve (1) in hole (8).
   - d. Install valve core (5) in valve (1). Use valve repair tool.
   - e. Torque valve (1) to 60 INCH-POUNDS.
   - f. Inflate tire to **105 psi.** Use inflator and nitrogen cart.
   - g. Check for leaks around valve (1). Use leak-detection compound (E18).
   - h. Install cap (2) on valve (1).
2. **Inspect (TI).**
3. **Remove jack** (para 1-7-13).

END OF TASK

3-2-6. MAIN LANDING GEAR EIGHT-BOLT WHEEL AND TIRE REMOVAL 3-2-6

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Adjustable	5120-00-423-6728

Personnel Required:

67R10 Attack Helicopter Repairer

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-13	Wheel jacked (tripod jack)

NOTE

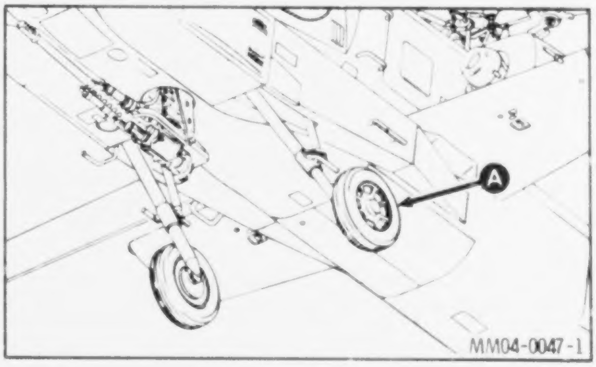
This task is typical for eight-bolt or nine-bolt wheels.

A. **REMOVAL**

1. **Chock wheels.**
2. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**
3. **Set parking brake** (para 1-7-6).

NOTE

The brake disk is held in place with parking brake set. One person may remove wheel.



3-2-6. MAIN LANDING GEAR EIGHT-BOLT WHEEL AND TIRE REMOVAL (cont) 3-2-6

2. **Remove axle nut (1) and wheel (2) from axle (3).**

   a. Remove lockwire from two screws (4).

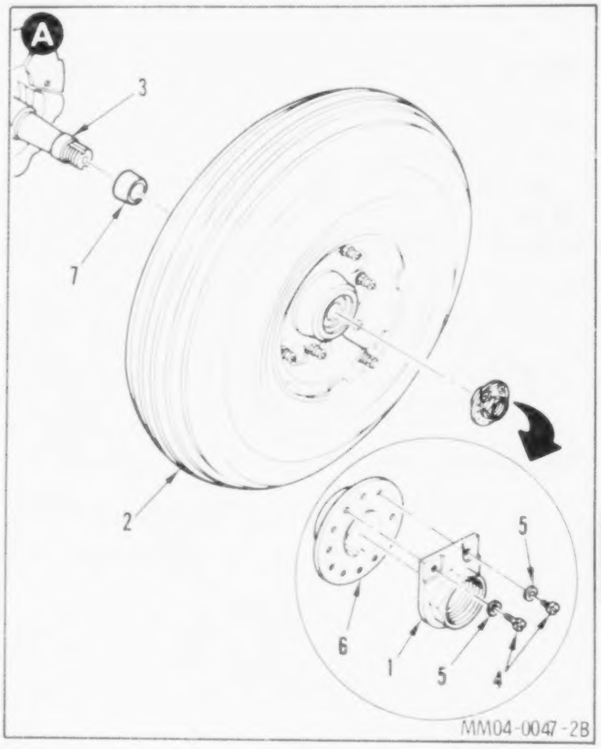
   b. Remove two screws (4) and washers (5).

   c. Remove axle nut (1). Use adjustable wrench.

   d. Slide lockring (6) from axle (3).

   e. Pull wheel (2) from axle (3).

   f. Remove spacer (7) from axle (3).



B. CLEANING

Clean axle and attaching hardware (para 1-5-36).

C. **INSPECTION**

Check axle and attaching hardware for wear, gouges, and cracks (para 3-2-1).

END OF TASK

3-2-7. MAIN LANDING GEAR WHEEL AND TIRE INSTALLATION 3-2-7

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Adjustable	5120-00-423-6728

Materials/Parts:

(E5) Grease
(E8) Lockwire

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

NOTE

This task is typical for eight-bolt or nine-bolt wheels.

1. **Install wheel (1).**

   a. Coat spacer (2) with grease (E5).

   b. Slide spacer (2) on axle (3).

   c. Position wheel (1) on axle (3). Aline brake disk grooves in wheel with lugs on brake disk (4). To engage brake disk (4), slide wheel inboard.

   d. Install lockring (5) and axle nut (6) on axle (3).

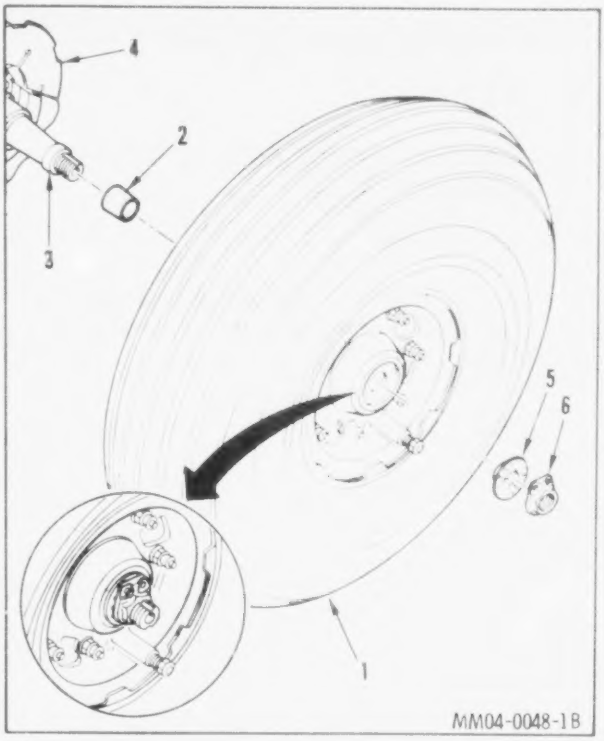
CAUTION

To prevent damage to wheel bearings, tighten axle nut only until a slight drag is felt.

   e. While rotating wheel, tighten axle nut (6) until a slight drag in bearings can be felt. Use adjustable wrench.

   f. Back off axle nut (6) one complete turn.

   g. While rotating wheel (1), retighten axle nut (6) until a slight drag in bearings can be felt.



GO TO NEXT PAGE

3-2-7. MAIN LANDING GEAR WHEEL AND TIRE INSTALLATION (cont) 3-2-7

   h. Rotate wheel (1). Check for smooth rotation.

   i. Shake wheel (1). Check that all free play in bearings and axle (3) is removed. Repeat steps e. thru i. to remove free play.

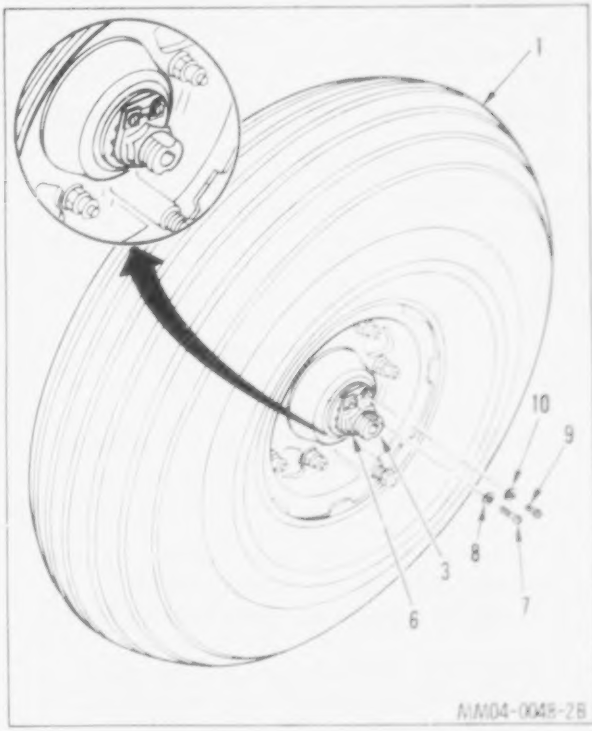
2. Install long screw (7) with washer (8) in axle nut (5).

3. Install short screw (9) with washer (10) in axle nut (6).

4. Lockwire screws (7) and (9) together. Use lockwire (E8).

5. Inspect (TI).

6. Remove axle jack (para 1-7-13).



END OF TASK

3-2-8. MAIN LANDING GEAR EIGHT-BOLT WHEEL TIRE REMOVAL 3-2-8

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Repair Tool, Pneumatic Tire Valve	5120-00-308-3809
Breaker, Tire Bead	4910-00-856-0586

Personnel Required:

67R10 Attack Helicopter Repairer

References:

TM 55-2620-200-24
TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
3-2-6	Main landing gear wheel and tire removed

A. REMOVAL

WARNING

- Do not take wheel apart before deflating tire. Pressure on loosened nuts could cause nuts to break loose and wheel halves to separate. Persons nearby could be injured by flying parts. If injury occurs, seek medical aid.

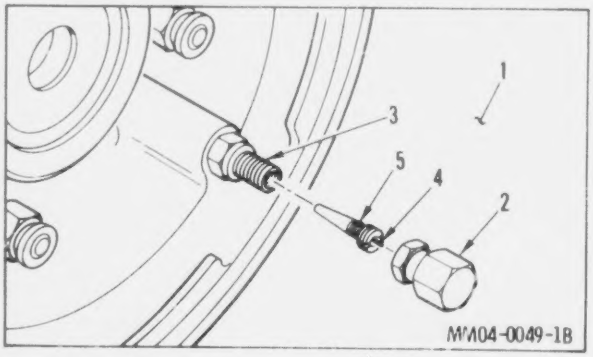
- Do not remove valve core from valve stem until all nitrogen is out of tire. Pressure on loosened core could cause core to be blown from stem and injure personnel. If injury occurs, seek medical aid.

1. Deflate tire (1).

   a. Remove valve cap (2) from valve stem (3).

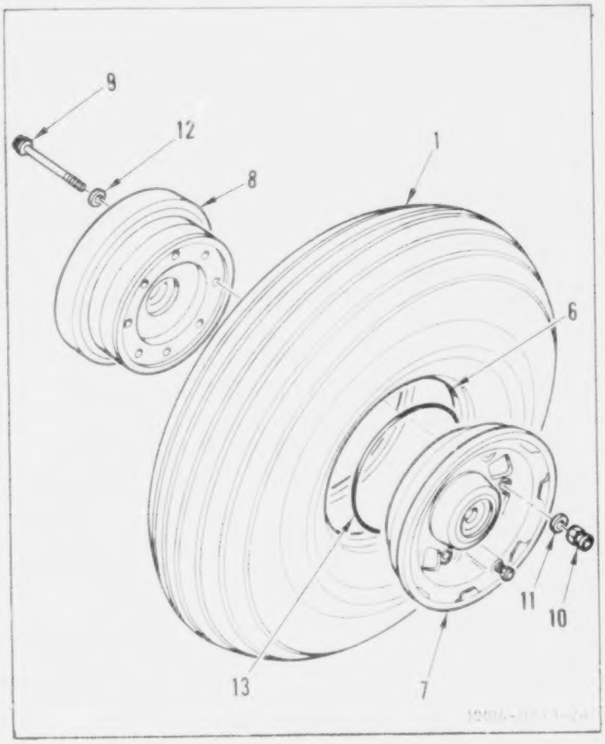
   b. To deflate tire (1), press valve core end (4).

   c. Remove valve core (5). Use valve repair tool.



GO TO NEXT PAGE

3-2-8. MAIN LANDING GEAR EIGHT-BOLT WHEEL TIRE REMOVAL (cont) 3-2-8



2. Break tire bead (6). Use tire bead breaker.

3. Remove wheel halves (7) and (8) from tire (1).

   a. Hold eight bolts (9). Remove eight nuts (10) and washers (1).

   b. Remove eight bolts (9) and washers (12).

   c. Remove wheel halves (7) and (8) from tire (1).

   d. Remove and discard packing (13) from wheel half (7).

B. CLEANING

1. Remove old caulking from around bolt holes (para 1-5-36).

2. Clean dirt and grease from wheel halves (para 1-5-36).

C. INSPECTION

1. Check wheel halves for cracks, dents, or nicks (TM 55-1500-204-25/1).

2. Check wheel halves for corrosion (para 1-5-38).

3. Check tire for cuts, splits, wear, flat spots, ply separation, exposed cord, and contamination (TM 55-2620-200-24).

4. Check wheel halves for galling and discoloration caused by overheating. None allowed.

END OF TASK

3-2-9. MAIN LANDING GEAR EIGHT-BOLT WHEEL TIRE INSTALLATION 3-2-9

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Repair Tool, Pneumatic Tire Valve	5120-00-308-3809
Inflator, Tire	4920-00-781-4823
Cart, Nitrogen	3655-00-534-0564
Wrench, Torque, 3/8 Drive	5120-00-288-8865
Cage, Safety	Local Manufacture (TM 55-1520-204-25/1)

References:

TM 55-1520-204-25/1
TM 55-2620-200-24

Materials/Parts:

	Packing
(E5)	Grease
(E17)	Compound, Thread
(E18)	Compound, Leak-Detection
(E77)	Lubricant, Antiseize
(E78)	Sealant

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

Equipment Conditions:

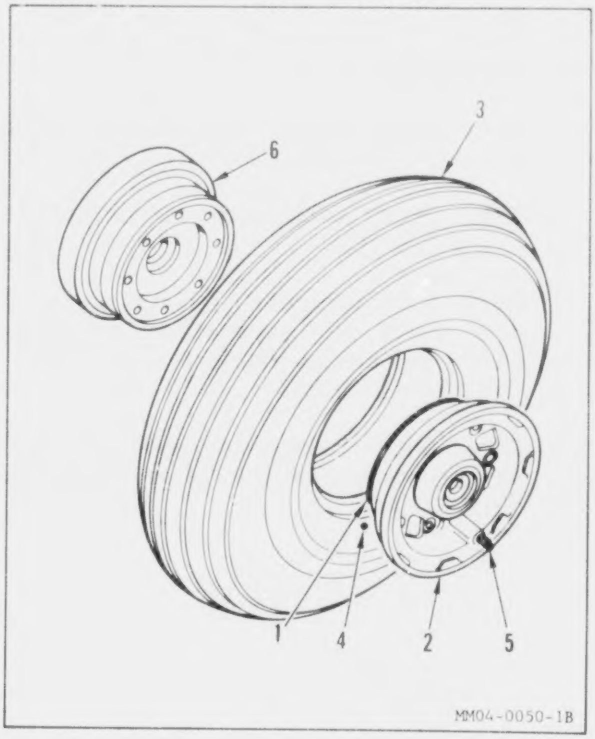
Ref	Condition
3-2-11	Main landing gear wheel bearings packed

1. **Lubricate new wheel packing (1).** Use grease (E5).

2. **Install packing (1) on shoulder of wheel half (2).**

3. **Position wheel half (2) in tire (3). Aline dot (4) on tire (3) with valve (5).**

4. **Position wheel half (6) in tire (3). Aline bolt holes in wheel half (2) and (6).**



GO TO NEXT PAGE

3-2-9. MAIN LANDING GEAR EIGHT-BOLT WHEEL TIRE INSTALLATION (cont) 3-2-9

5. **Lubricate bolt (7) threads** Use thread compound (E17).

6. **Lubricate bearing surfaces of bolts (7), washers (8) and (9), and nuts (10).** Use antiseize lubricant (E77).

7. **Install eight bolts (7), washers (8) and (9), and nuts (10).** Torque nuts (10) to **300 INCH-POUNDS.**

   a. Place countersunk washers (8) on bolts (7) with countersink against bolt heads.

   b. Install eight bolts (7) with washers (8) through wheel halves.

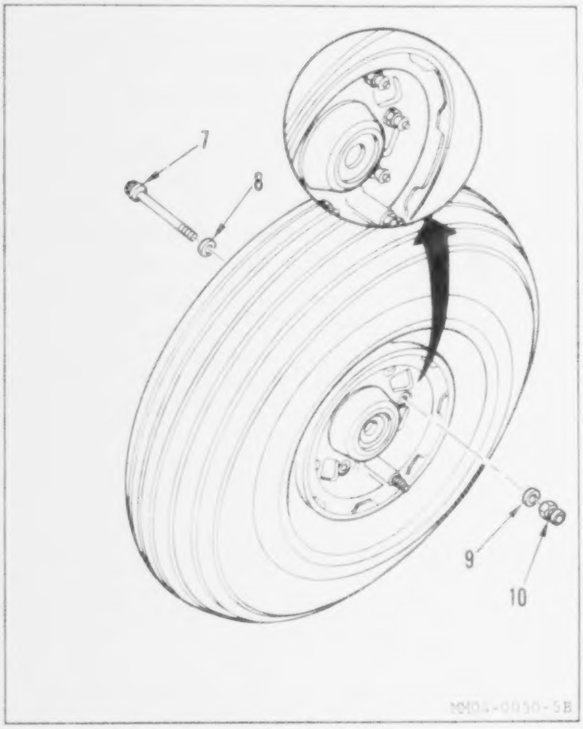
   c. Install eight washers (9) and nuts (10) on eight bolts (7).

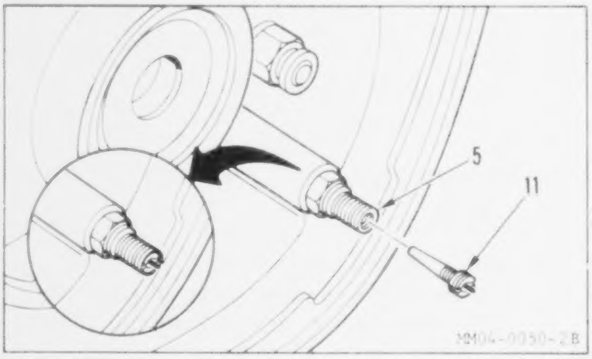
   d. Hold eight bolts (7).

   e. Torque eight nuts (10) to **300 INCH-POUNDS.**

8. **Apply sealant to area around heads of bolts (7) and nuts (10).** Use sealant (E78).

9. **Install valve core (11) in valve (5).** Use valve repair tool.





GO TO NEXT PAGE

WARNING

- Wheel and tire must be in safety cage when tire is being inflated. The tire could blow off wheel, or the wheel halves could separate. Flying parts could injure personnel. If injury occurs, seek medical aid.

- Allow 30 minutes before removing inflated tire from safety cage.

10. **Place wheel and tire in safety cage (12)** (TM 55-1520-204-25/1).

11. **Inflate tire to 105 psi.**

    a. Connect hose (11) and chuck (13) to valve (6).

    b. Inflate tire to 105 PSI. Use tire inflator and nitrogen cart.

    c. Shut off inflator.

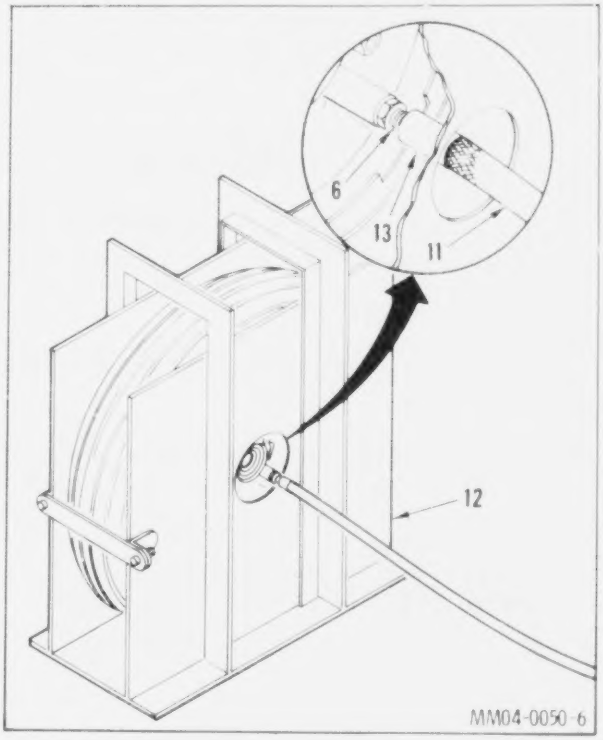
    d. Disconnect chuck (13) from valve (6).

12. **Remove wheel and tire from safety cage.**

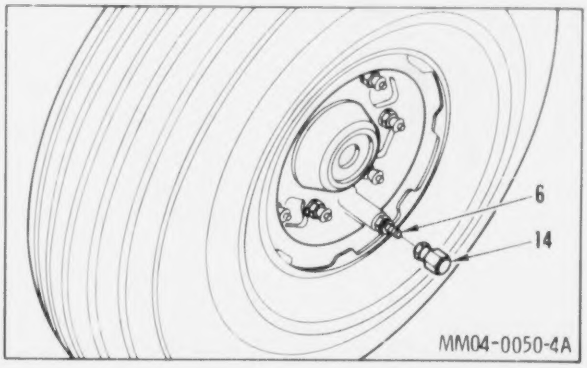
13. **Check wheel and tire for leaks. Check valve and around wheel rim.** Use leak detection compound (E18).

14. **Install valve cap (14) on valve (6).**

15. **Inspect (TI).**



MM04-0050-6



MM04-0050-4A

END OF TASK

3-2-10. MAIN LANDING GEAR WHEEL BEARING REPLACEMENT 3-2-10

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

(E5) Grease

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-2620-200-24

Equipment Conditions:

Ref	Condition
3-2-6	Main landing gear wheel and tire removed

NOTE

This task is typical for eight-bolt or nine-bolt wheels.

A. REMOVAL

Remove two snaprings (1), bearing seals (2), and wheel cone bearings (3) from cone bearing races (4).

CAUTION

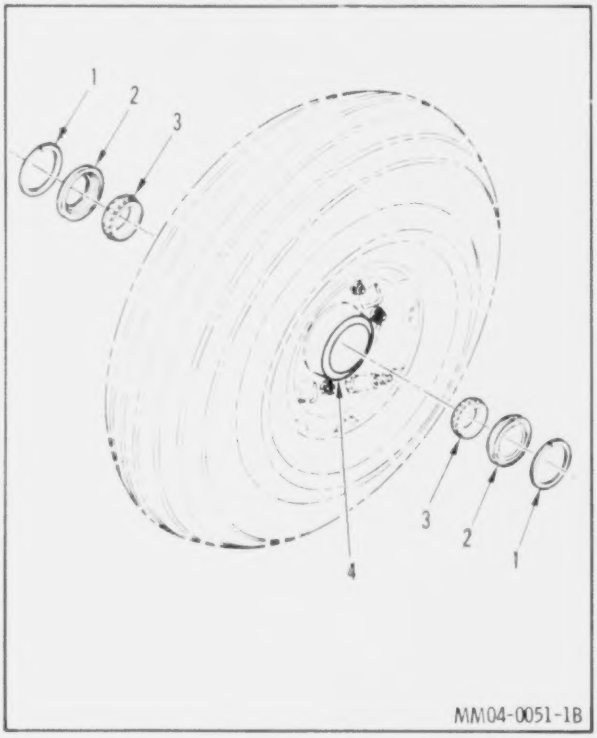
Do not spin bearings with compressed air. This could damage unlubricated bearings.

B. CLEANING

Clean wheel cone bearings (para 1-5-36).

C. INSPECTION

1. Check wheel cup bearings for wear, fretting, and looseness. None allowed.



GO TO NEXT PAGE

3-2-10. MAIN LANDING GEAR WHEEL BEARING REPLACEMENT (cont) 3-2-10

2. Check tire for cuts, splits, wear, flat spots, ply separation, exposed cord, and contamination (TM 55-2620-200-24).

D. INSTALLATION

1. Grease cone bearings (3) (para 3-2-11).

2. Install two cone bearings (3), bearing seals (2), and snaprings (1) in cone bearing races (4).

   a. Coat two races (4). Use grease (E5).

   b. Position bearings (3) in races (4).

   c. Coat two new seals (2). Use grease (E5).

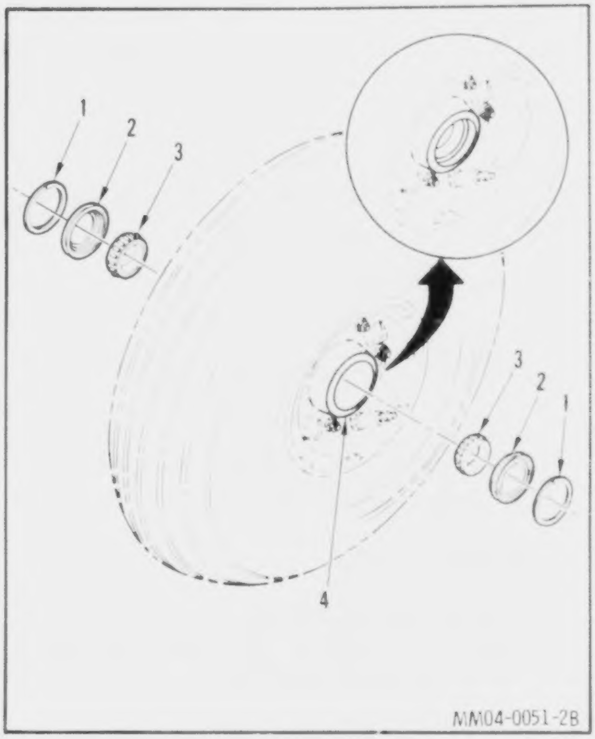
   d. Install seals (2) in races (4) with edge of seal (2) facing bearings (3).

   e. Press two seals (2) in place with hand pressure.

   f. Install two snaprings (1).

3. Inspect (TI).

4. Install main landing gear wheel and tire (para 3-2-9).



END OF TASK

3-2-11. BEARING PACKING 3-2-11

Materials/Parts:		Personnel Required:	
(E1)	Solvent	67R10	Attack Helicopter Repairer
(E5)	Grease	66R30	Inspector/Supervisor
(E32)	Lint Free Cloth		

1. Clean bearings.

   a. Clean bearings. Use solvent (E1) (para 1-5-36).

   b. Allow bearings to air dry.

2. Pack bearings.

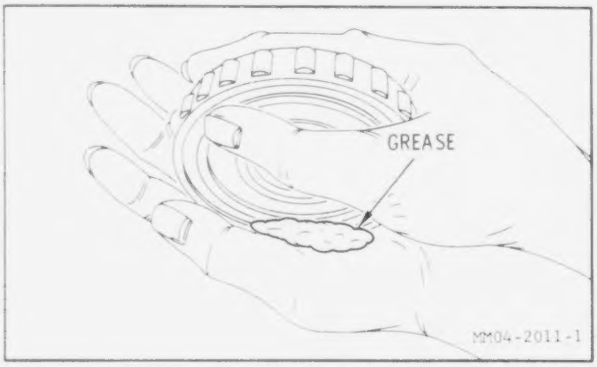
   a. Place grease in palm of hand. Use grease (E5).

   b. Using a cupping motion, force grease into large diameter side of bearing.

   c. Turn bearing and repeat step b when grease protrudes from other side of bearing.

   d. Continue turning and packing bearing until it is completely packed.

   e. Wipe excess grease from of bearing. Use a clean lint-free cloth (E32).



3. Inspect (TI).

END OF TASK

3-2-12. MAIN LANDING GEAR TRAILING ARM REMOVAL 3-2-12

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Spanner Attachment Set	5120-00-513-1754

Personnel Required:

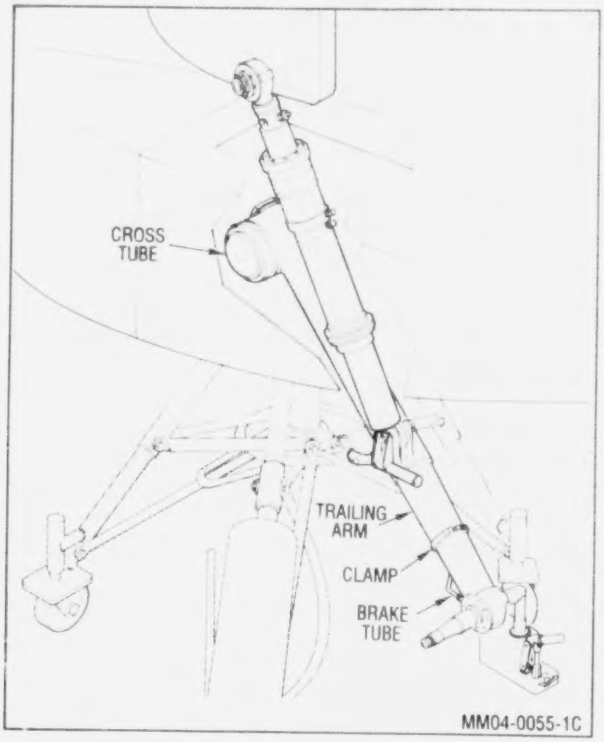
67R10 Attack Helicopter Repairer (2)
One to assist

References:

TM 9-1090-206-23-1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-13	Main landing gear jacked (axle jack)
2-2-2	Access door L140 or R140 opened
3-4-10	Wheel brake removed



GO TO NEXT PAGE

3-2-12. MAIN LANDING GEAR TRAILING ARM REMOVAL (cont) 3-2-12

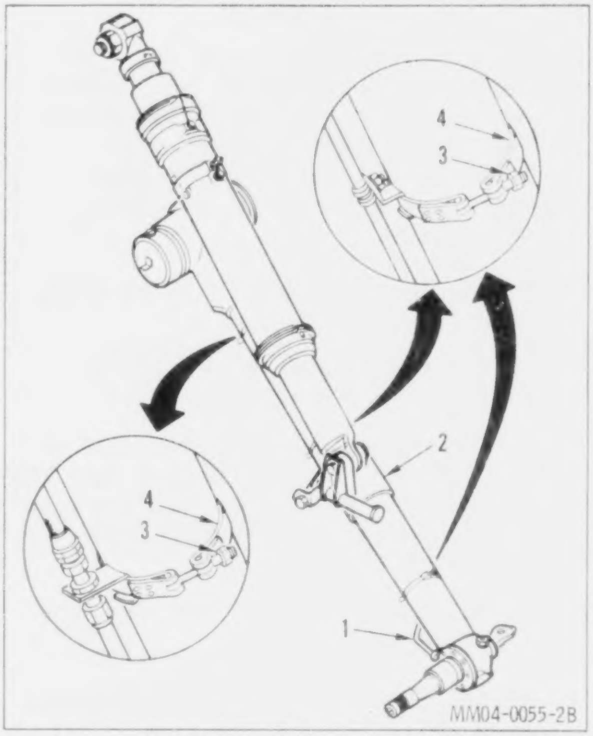
A. REMOVAL

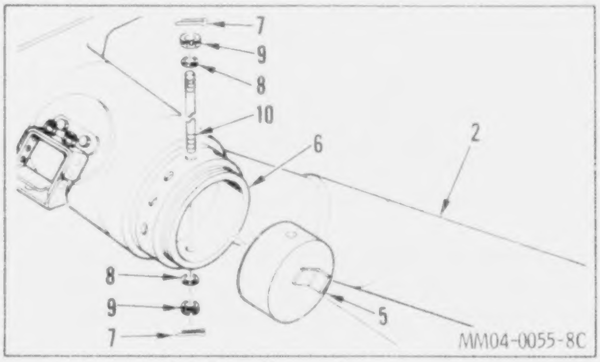
1. Remove brake tube (1) from trailing arm (2).
   - a. Loosen nut (3) on three clamps (4).
   - b. Remove three clamps (4).
   - c. Swing brake tube (1) away from trailing arm (2).
   - d. Install tube protective cap on brake tube (1).

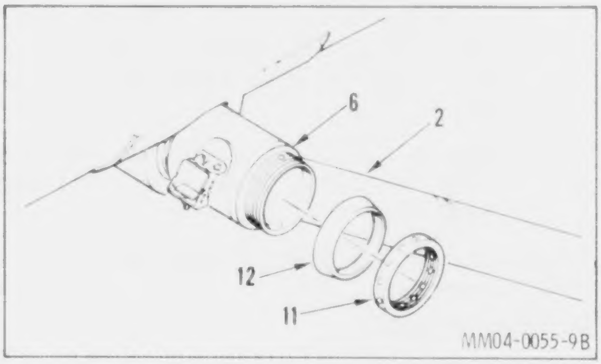
WARNING

Personal injury could occur during trailing arm removal. Trailing arm weighs about 50 pounds. Two people are required to lift trailing arm from helicopter. If injury occurs, seek medical aid.

2. Remove shock strut (para 3-2-15).
3. Remove step (para 3-2-3).
4. If working on left trailing arm, remove rounds counter and rounds counter mounting bracket (TM 9-1090-208-23-1).
5. Remove end cap (5) from cross tube (6).
   - a. Remove and discard two cotter pins (7).
   - b. Remove two nuts (9) and washers (8).
   - c. Remove threaded stud (10) from end cap (5) and cross tube (6).
   - d. Remove end cap (5) from cross tube (6).
6. Remove retaining ring (11) and outer spacer (12) from cross tube (6). Use spanner wrench.







GO TO NEXT PAGE

3-2-12. MAIN LANDING GEAR TRAILING ARM REMOVAL (cont) 3-2-12

CAUTION

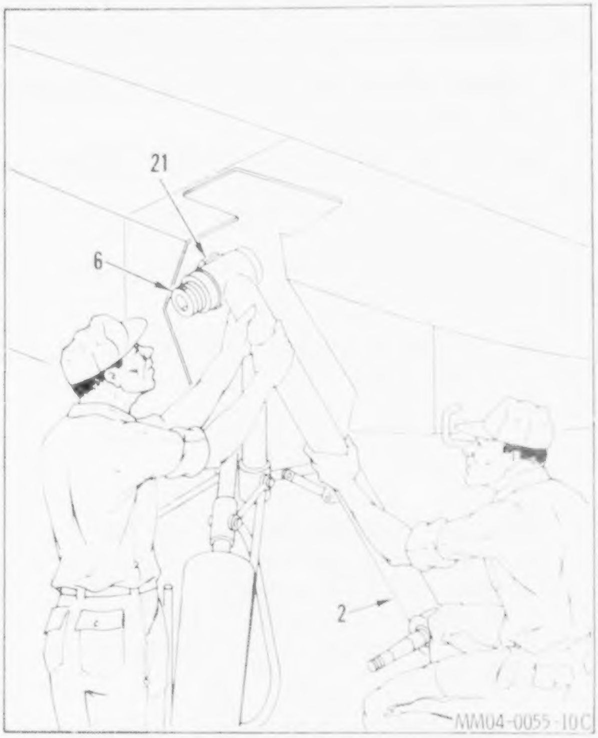
Squat switch and target could be damaged during removal of trailing arm assembly. Do not allow trailing arm to hang straight down. Squat switch and target are at upper end of trailing arm near cross tube.

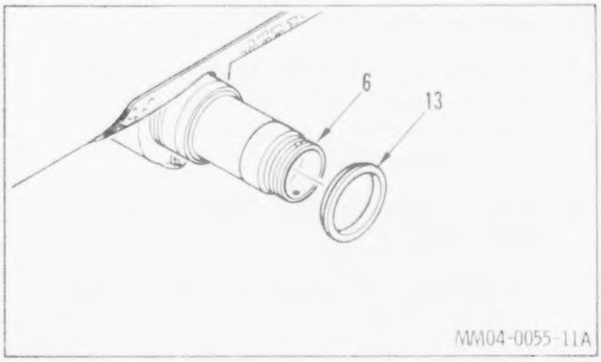
7. **Remove trailing arm (2) from cross tube (6).**
   a. One person hold upper end of trailing arm (2).
   b. Second person hold lower end of trailing arm (2), taking care not to allow arm (2) to hang vertical and damage squat switch and target (21).
   c. Slide upper end of arm (2) from cross tube (6).
8. **Remove inner spacer (13) from cross tube (6).**

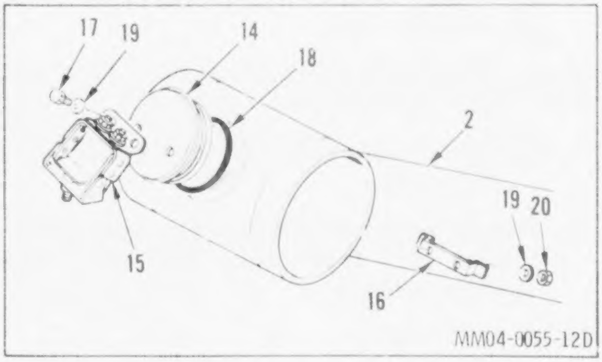
NOTE

Squat switch is on left trailing arm cap. If left trailing arm is to be replaced, perform step 9. If right trailing arm is to be replaced, perform step 10.

9. **Remove squat switch bracket (15), cap (14), with packing (18), and retainer (16) from left trailing arm (2).**
   a. Hold two bolts (17). Remove two nuts (20), two washers (19), and retainer (16) from two bolts (17).
   b. Remove two bolts (17), two washers (19), switch bracket (15), and cap (14) from trailing arm (2).
   c. Remove and discard packing (18) from cap (14).







GO TO NEXT PAGE

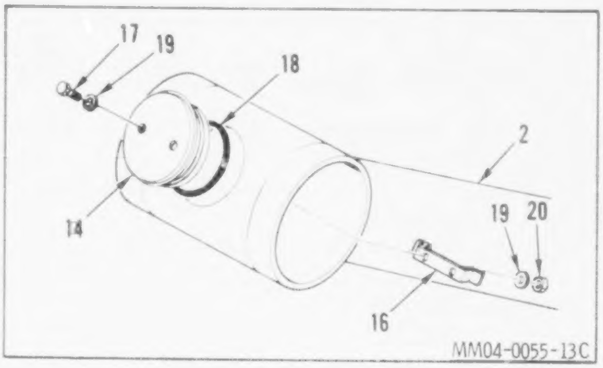
3-2-12. MAIN LANDING GEAR TRAILING ARM REMOVAL (cont) 3-2-12

10. Remove cap (14), packing (18), and retainer (16) from right trailing arm (2).

    a. Hold two bolts (17). Remove two nuts (20), washers (19), and retainer (16).

    b. Remove two bolts (17), washers (19), and cap (14).

    c. Remove and discard packing (18).



11. Remove jack/tow pad adapter (para 3-2-4).

B. CLEANING

Clean all attach points before arm installation (para 1-5-36).

C. INSPECTION

1. Check all attach points before arm installation (para 3-2-1).

2. Check trailing arm before installation:

    a. Measure inside diameter of arm upper attachment (cross tube) bushings. Bushing inside diameter shall not exceed **4.5067 INCHES.**

    b. Measure inside diameter of arm shock strut attachment bushings. Bushing inside diameter shall not exceed **1.2534 INCHES**, maximum allowable elongation is **0.002 INCH.**

3. Check trailing arm for corrosion (para 1-5-38).

4. Inspect (TI).

END OF TASK

3-2-13. MAIN LANDING GEAR TRAILING ARM INSTALLATION 3-2-13

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Square, Combination	5120-00-078-8949
Spanner Attachment Set	5120-00-513-1754
Wrench, Torque 1/4 Drive	5120-00-542-4489
Wrench, Torque, 1/2 Drive	5120-00-270-3121
Brush, Wire	7920-00-291-5815
Apron, Impermeable	8415-00-082-6108
Goggles, Industrial	4240-00-052-3776
Faceshield	4240-00-202-9473
Gloves, Rubber	8415-00-266-8677

Materials/Parts:

	Packing (2)
	Cotter Pin (2)
(E16)	Petrolatum
(E22)	Methyl Ethyl Ketone (MEK)
(E48)	Lubricant

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

References:

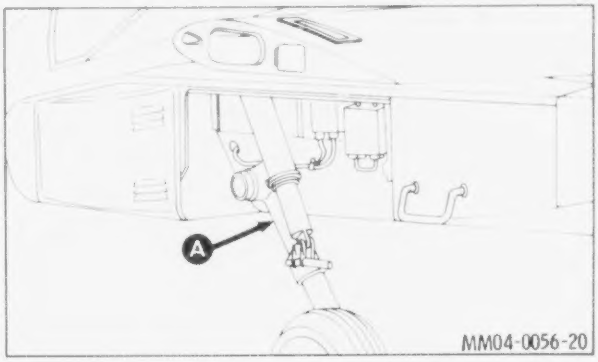
TM 9-1090-208-23-1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

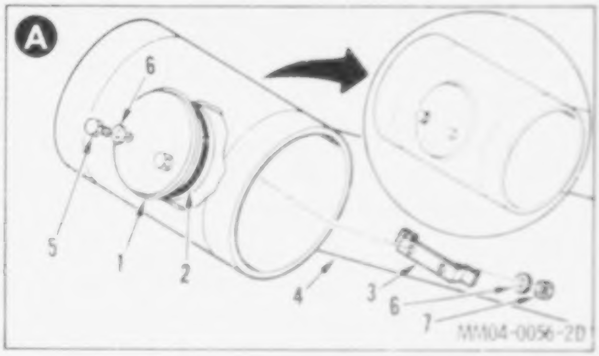
NOTE

Squat switch assembly is mounted on left trailing arm cap. If left trailing arm is to be replaced, perform steps 2 thru 16. If right trailing arm is to be replaced perform step 1, and steps 3 thru 16.



GO TO NEXT PAGE

3-2-13. MAIN LANDING GEAR TRAILING ARM INSTALLATION (cont) 3-2-13



1. **Install cap (1) packing (2) and retainer (3) on right trailing arm (4).** Torque two bolts (5) to **20 INCH-POUNDS.**

   a. Lubricate packing (2). Use petrolatum (E16).

   b. Position packing (2) on cap (1).

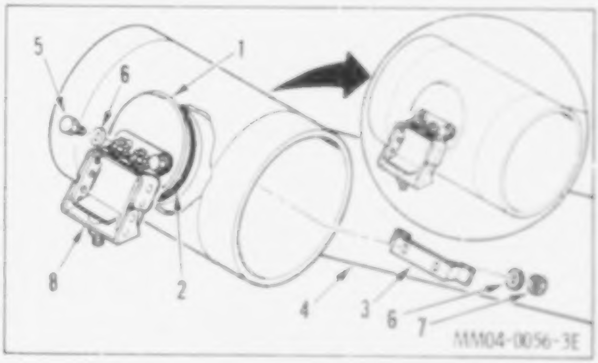
   c. Position cap (1) on arm (4).

   d. Position retainer (3) inside arm (4) under cap (1).

   e. Install two bolts (5) through two washers (6), cap (1), and retainer (3).

   f. Hold two bolts (5). Install two washers (6) and two nuts (7).

   g. Torque two bolts (5) to **20 INCH-POUNDS.**



2. **Install cap (1) and packing (2) with squat switch bracket (8) and retainer (3) on right trailing arm (4).** Torque two bolts (5) to **20 INCH-POUNDS.**

   a. Lubricate packing (2). Use petrolatum (E16).

   b. Install packing (2) on cap (1).

   c. Position cap (1) on arm (4).

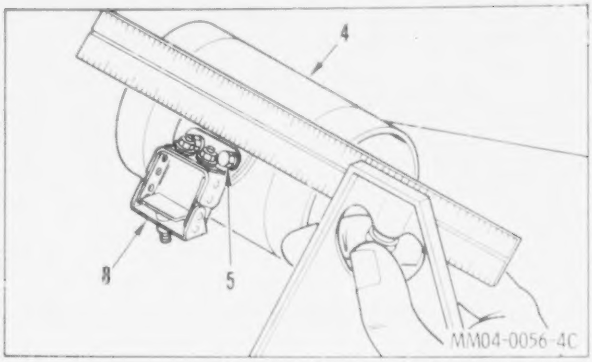
   d. Position bracket (8) on cap (1) so face of bracket (8) is facing forward when arm (4) is installed.

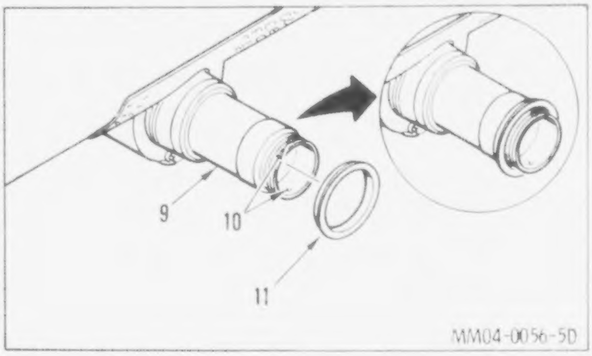
   e. Position retainer (3) inside arm (4) under cap (1). Install two bolts (5) through two washers (6), bracket (8), cap (1), and retainer (3).

   f. Hold two bolts (5). Install two washers (6) and two nuts (7). Do not tighten.

GO TO NEXT PAGE

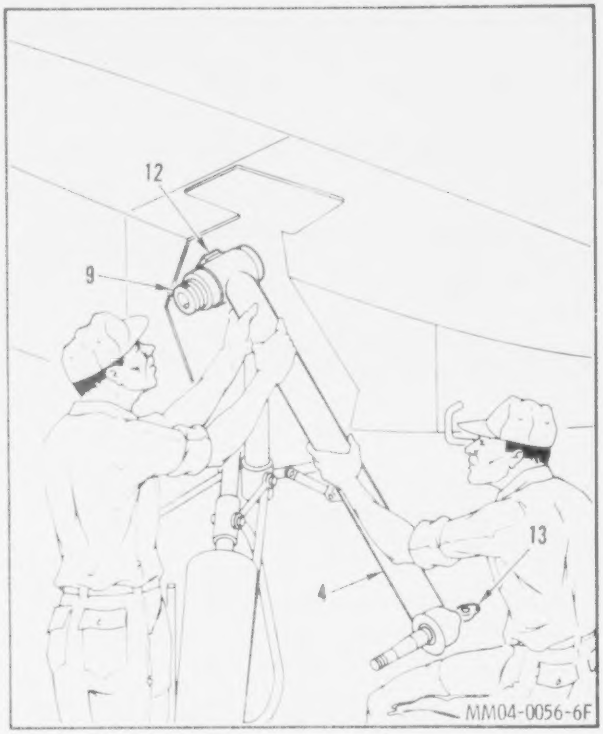
3-2-13. MAIN LANDING GEAR TRAILING ARM INSTALLATION (cont) 3-2-13

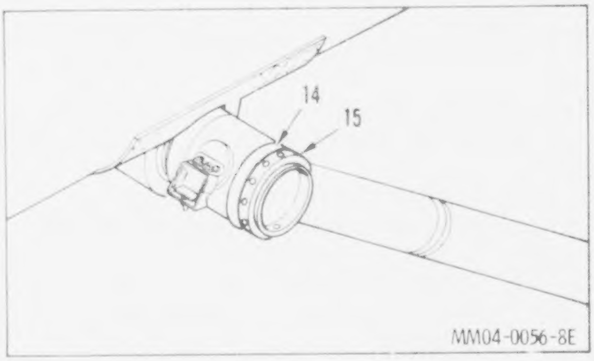




3. **Aline bracket (8) with center of right trailing arm (4) and secure.** Torque two bolts (5) to **20 INCH-POUNDS.**
   - a. Aline face of bracket (8) with center of arm (4). Use combination square.
   - b. Torque two bolts (5) to **20 INCH-POUNDS.** Use 1/4 drive torque wrench.
   - c. Check alinement (para 9-8-23).
4. **Inspect (TI).**
5. **Clean right trailing arm (4)** (para 1-5-36).
6. **Clean threads on cross tube (9).** Use MEK (E22) and wire brush to remove any dry film lubricant (para 1-5-36).
7. **Check threads on cross tube (9) for burrs at safety stud holes (10).**
8. **Check for cracks on cross tube (9).** None allowed.
9. **Install inboard spacer (11) on cross tube (9).** Small side should face inboard.
10. **Inspect (TI).**

GO TO NEXT PAGE





WARNING

Personal injury could occur during trailing arm installation. Trailing arm weighs about 50 pounds. Two people are required to lift trailing arm on helicopter. If personal injury occurs, seek medical aid.

CAUTION

Squat switch and target could be damaged during installation of trailing arm. Do not allow trailing arm to hang straight down. Squat switch and target are at upper end of trailing arm near cross tube.

11. Position right trailing arm (4) on cross tube (9). Torque retaining ring (14) to 1200 INCH-POUNDS.

    a. Slide upper end of arm (4) on tube (9). Do not damage squat switch and target (12).

    b. Install jack/tow pad adapter (13) (para 3-2-4).

    c. Support arm (4) at jack/tow pad adapter (13) until shock strut can be installed.

    d. Install outboard spacer (14), small side out.

    e. Spray a light coat of lubricant on retaining ring (15) threads. Use lubricant (E48). Install ring (14) before lubricant is dry.

    f. Install retaining ring (14).

    g. Torque to 1200 INCH-POUNDS. Use spanner and 1/2 drive torque wrench.

    h. Back off ring (14) two holes.

GO TO NEXT PAGE

3-2-13. MAIN LANDING GEAR TRAILING ARM INSTALLATION (cont) 3-2-13

12. **Install end cap (16) in cross tube (9).** Torque two nuts (19) **60 to 70 INCH-POUNDS.**

    a. Install end cap (16) in tube (9).

    b. Install threaded stud (17) through arm (4) and end cap (15).

    c. Install two washers (18) and two nuts (19).

    d. Hold two nuts (19).

    e. Torque each nut (19) to **60 INCH-POUNDS.** Use 1/4 drive torque wrench.

    f. Increase torque to aline cotter pipn holes, but do not exceed **70 INCH-POUNDS.**

    g. Install two new cotter pins (20).

13. **Install shock strut and step** (para 3-2-16).

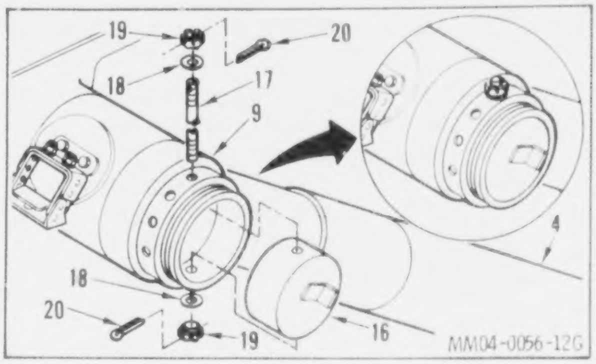
14. **Install brake tube (21) on right trailing arm (4).**

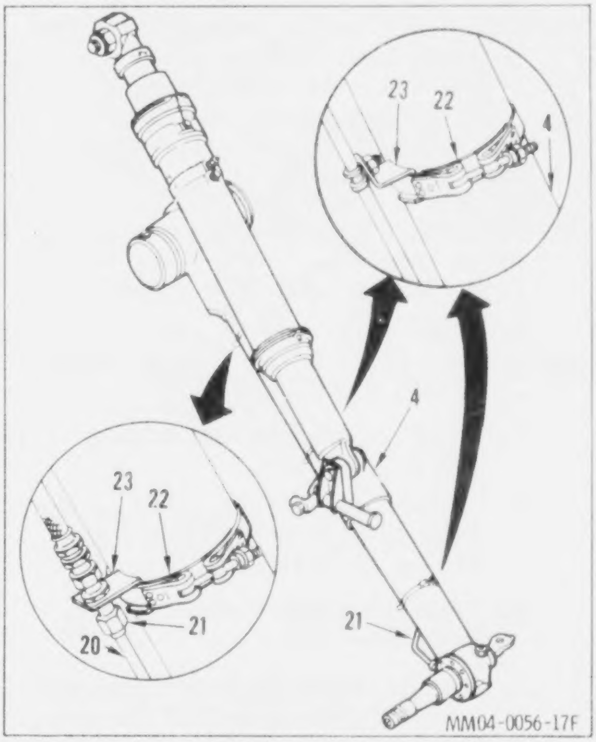
    a. Remove tube protective cap. Position brake tube on arm (4).

    b. Connect brake tube (20) to coupling (21) at upper end of arm (4).

    c. Install three clamps (22).

    d. Install three brackets. Secure clamps.

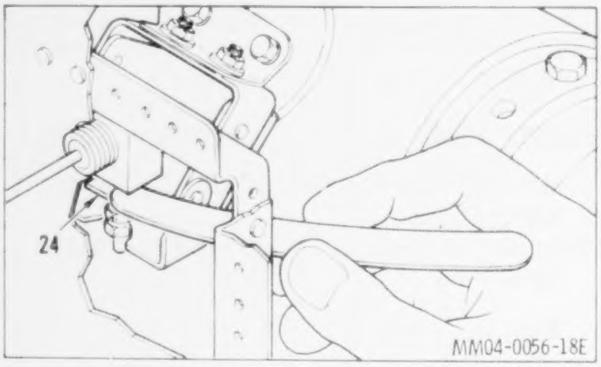




GO TO NEXT PAGE

3-2-13. MAIN LANDING GEAR TRAILING ARM INSTALLATION (cont) 3-2-13

15. Inspect (TI).
16. Install wheel brake (para 3-4-11).
17. Install main landing gear wheel and tire (para 3-2-9).
18. Remove landing gear axle jacks (para 1-7-13).
19. Check that gap (24) between squat switch and target is between 0.150 to 0.170 inch. If necessary, adjust gap (para 9-8-23).
20. Install rounds counter mounting bracket and rounds counter on left trailing arm only (TM 9-1090-208-23-1).
21. Secure access fairings L140/R140 (para 2-2-2).



END OF TASK

3-2-14. MAIN LANDING GEAR SQUAT SWITCH TARGET AND BRACKET DISASSEMBLY/ASSEMBLY 3-2-14

This task covers: A. DISASSEMBLY B. ASSEMBLY

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Materials/Parts:

(E29) Lockwire

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

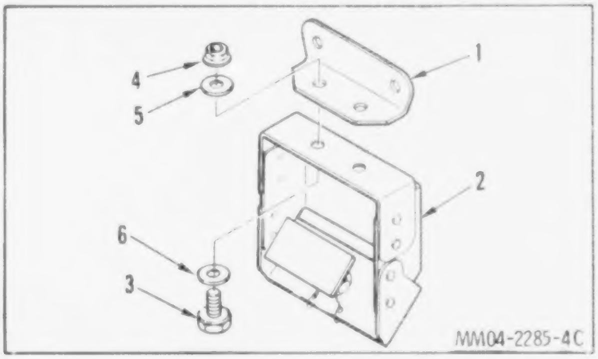
Ref	Condition
1-7-2	Helicopter safed
1-7-12	Helicopter jacked (tripod jacks)
2-2-2	Access door L115 open
3-2-15	Main landing gear shock strut removed
3-2-12	Main landing gear trailing arm/squat switch target and bracket assembly removed

A. DISASSEMBLY

1. **Remove bracket (1) from squat switch target bracket (2).**

   a. Hold two bolts (3).

   b. Remove two nuts (4), two washers (5), bracket (1), two bolts (3), and two washers (6).



GO TO NEXT PAGE

3-2-14. MAIN LANDING GEAR SQUAT SWITCH TARGET AND BRACKET DISASSEMBLY/ASSEMBLY (cont) 3-2-14

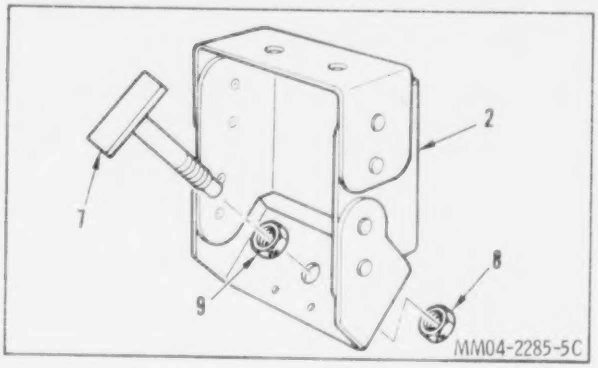
2. **Remove squat switch target (7) from squat switch target bracket (2).**

   a. Remove lockwire from adjusting nuts (8) and (9).

   b. Hold target (7). Remove nut (8).

   c. Remove target (7) from bracket (2).

   d. Hold target (7). Remove nut (9).



B. ASSEMBLY

1. **Install squat switch target (7) in squat switch target bracket (2).**

   a. Install nut (9) on target (7).

   b. Position target (7) in bracket (2).

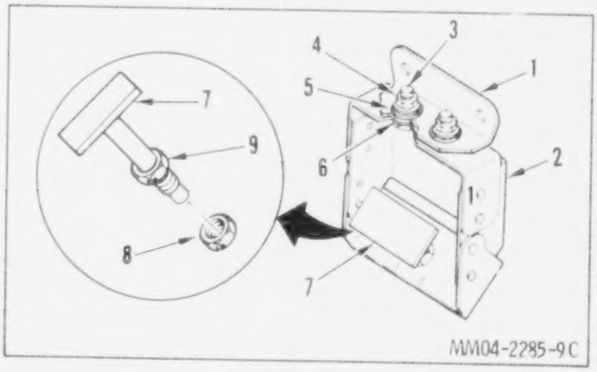
   c. Hold target (7). Install nut (8).

2. **Install bracket (1) on squat switch target bracket (2).** Torque two nuts (4) to **60 INCH-POUNDS.**

   a. Install two washers (6) and bolts (3).

   b. Hold two bolts (3). Install bracket (1), washers (5) and nuts (4).

   c. Torque nuts (4) to **60 INCH-POUNDS.**



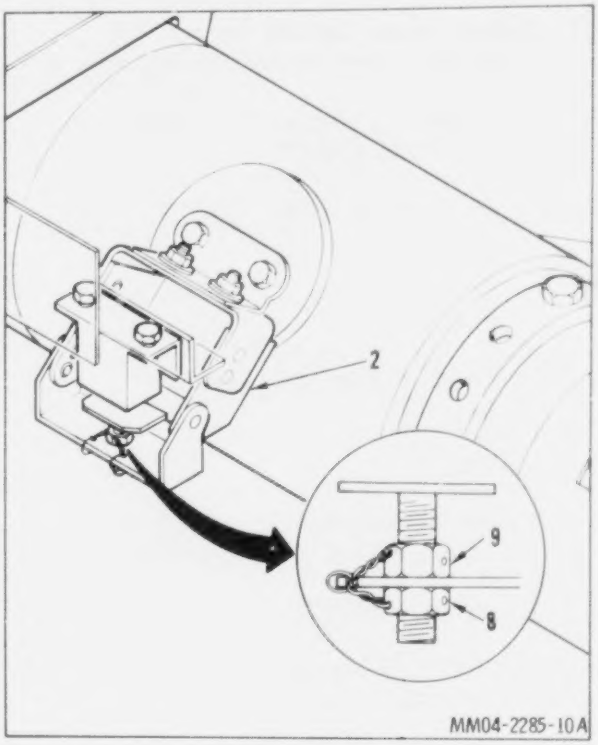
3. **Inspect (TI).**

4. **Install squat switch target bracket (2) on MLG** (para 3-2-13).

GO TO NEXT PAGE

3-2-14. MAIN LANDING GEAR SQUAT SWITCH TARGET AND BRACKET DISASSEMBLY/ASSEMBLY (cont) 3-2-14

5. **Install main landing gear trailing arm** (para 3-2-12).
6. **Install main landing gear shock strut** (para 3-2-16). Leave helicopter on jacks until squat switch target adjustments are made (para 9-8-23).
7. Adjust squat switch target plate (para 9-8-23).
8. **Lockwire nuts (8) and (9) to bracket (2).** Use lockwire (E29).
9. **Lower helicopter and remove tripod jacks** (para 1-7-12).
10. **Secure access door L115** (para 2-2-2).
11. **Inspect (TI).**



END OF TASK

3-2-15. MAIN LANDING GEAR SHOCK STRUT REMOVAL 3-2-15

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Socket, 1-3/4, 3/4 Drive	5120-00-199-7767
Jack, Hydraulic Axle, 5-Ton	1730-00-540-2343
Handle, Socket Wrench, 3/4 Drive	5120-00-221-7959
Driftpin 1/2-inch	5120-00-239-0036

Materials/Parts:

Cotter Pin (2)

Personnel Required:

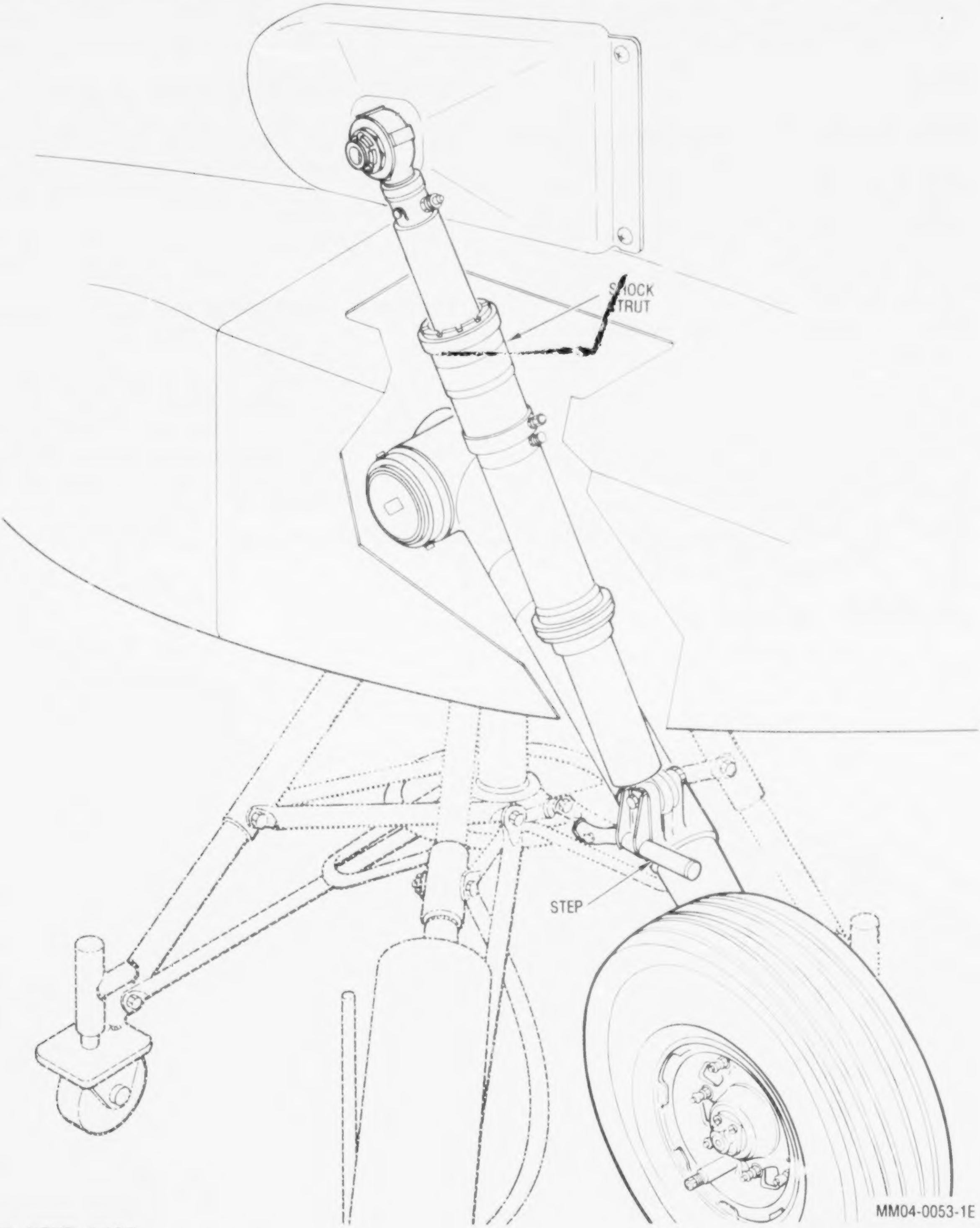
67R10 Attack Helicopter Repairer (2)
One to assist

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-12	Helicopter jacked (tripod jacks)
2-2-2	Access doors L135 and/or R135 opened; fairings L140 and/or R140 removed

GO TO NEXT PAGE

3-2-15. MAIN LANDING GEAR SHOCK STRUT REMOVAL (cont)



GO TO NEXT PAGE

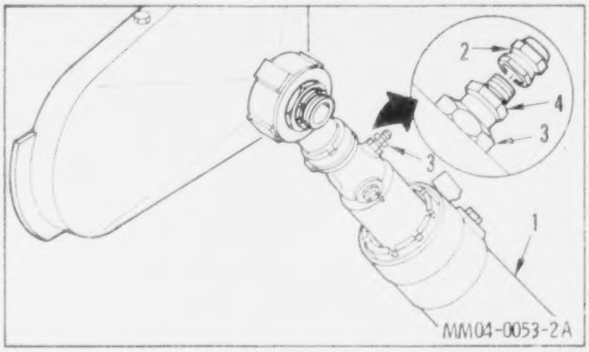
3-2-15. MAIN LANDING GEAR SHOCK STRUT REMOVAL (cont) 3-2-15

A. REMOVAL

1. **Deflate main landing gear shock strut (1).**

   a. Remove valve cap (2) from shock strut air valve (3).

   b. Turn outboard air valve nut (4) counterclockwise. Allow nitrogen pressure to bleed off.

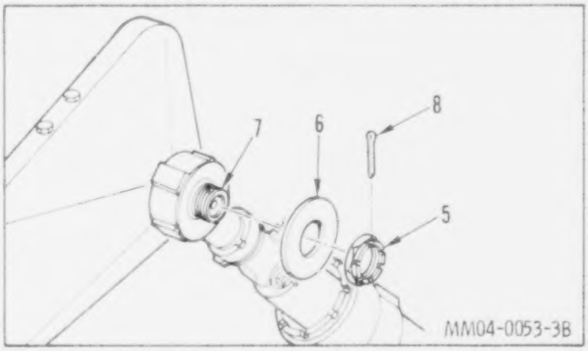


2. **Remove mount shaft nut (5) and washer (6) from mount shaft (7).**

   a. Remove and discard cotter pin (8) from shaft (7).

   b. Remove nut (5) from shaft (7). Use 1-3/4 socket and socket wrench handle.

   c. Remove washer (6) from shaft (7).

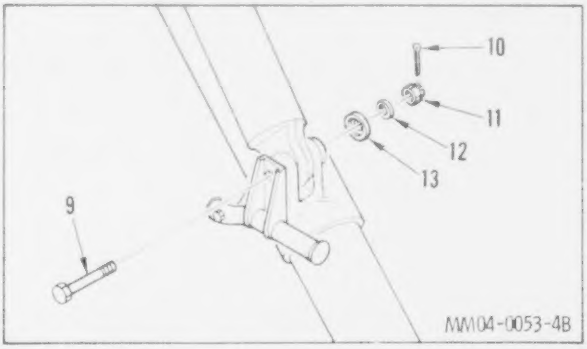


3. **Remove strut bolt (9).**

   a. Remove and discard cotter pin (10) from bolt (9).

   b. Hold bolt (9). Remove nut (11).

   c. Remove washer (12), bolt (9), and pin cover (13).

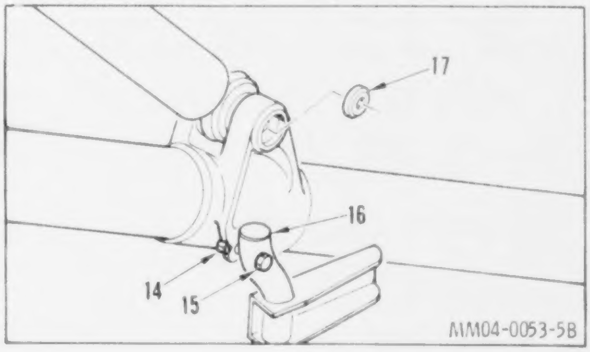


4. **Loosen nut (14) on step bolt (15) two full turns.**

   a. Hold bolt (15). Loosen nut (14).

   b. Swing step (16) clear of strut (1).

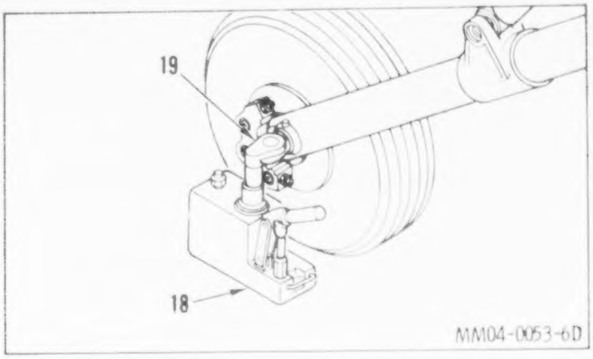
5. **Remove outboard pin cover (17).**



GO TO NEXT PAGE

3-2-15. MAIN LANDING GEAR SHOCK STRUT REMOVAL (cont) 3-2-15

6. **Place hydraulic axle jack (18) under main landing gear jack/tow pad adapter (19). Operate jack until jack piston contacts adapter.**



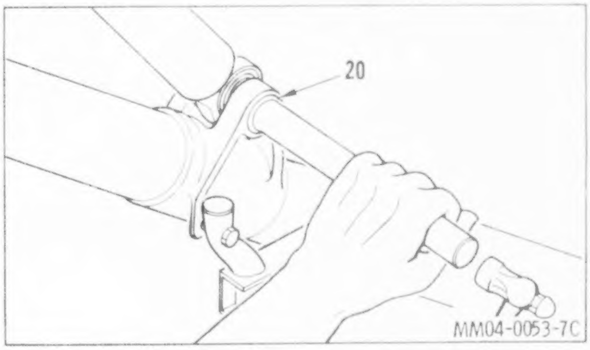
WARNING

Shock strut rod end will move downward when shock strut pin is removed. Do not try to remove pin with fingers. Injury may occur. If injury occurs, seek medical aid.

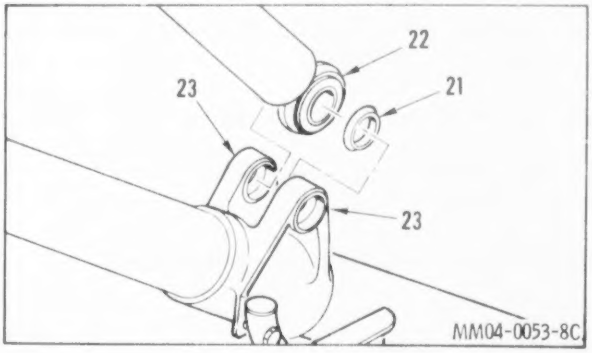
CAUTION

Do not remove jack after left shock strut is removed. Removal of jack will allow trailing arm to move down. This could damage squat switch and bracket at upper end of trailing arm.

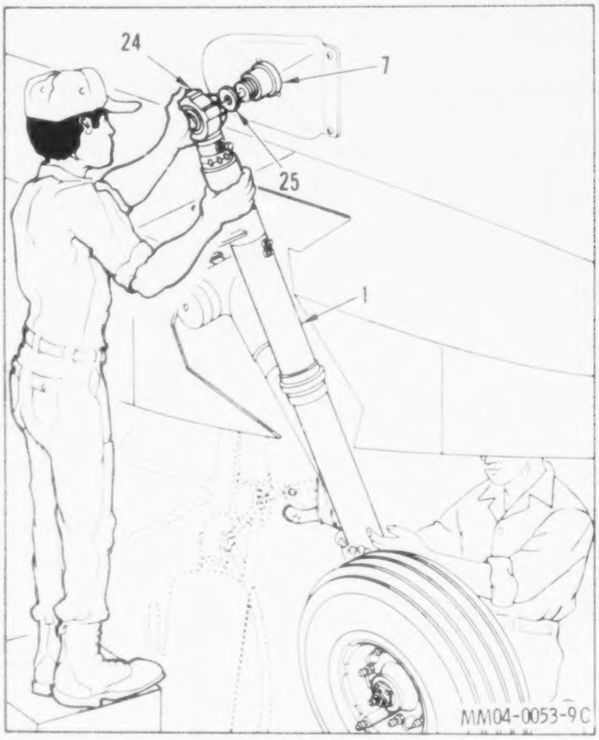
7. **Remove shock strut pin (20).**
   a. Operate jack (18) until pin (20) is loose in trailing arm (28).
   b. Remove pin (20). Use 1/2-inch driftpin.



8. **Remove spacer (21) from between lower rod end (22) and lugs (23).**
   a. Lift shock strut rod end (22) until it clears lugs (23).
   b. Remove spacer (21).



GO TO NEXT PAGE



WARNING

Personal injury could occur during shock strut removal. Shock strut weighs about 45 pounds. To prevent possible injury, two persons are needed for lifting. If injury occurs, seek medical aid.

9. With one person holding shock strut (1) upper end and second person lifting lower end, slide shock strut upper rod end (24) off shaft (7). Guide strut (1) down and away from helicopter.

10. Remove inboard washer (25) from shaft (7).

B. CLEANING

1. Wipe shock strut with a clean rag.

C. INSPECTION

1. Check shock strut for nicks, dents or cracks. None allowed.

2. Check shock strut for leaks. None allowed. Slight wetting of strut cylinder and seals insufficient to form a drop is normal.

NOTE

Squat switch and target are installed only on left trailing arm.

3. Check squat switch and target for loose attachment, loose electrical connections, frayed wires, and cracks. None allowed.

4. Check mount shaft for cracks or deformation. None allowed.

5. Check rod ends for bearing hole elongation. Maximum elongation 0.002 inch.

6. Check shock strut bearings for play. Maximum radial and axial play 0.004 INCH.

7. Check bore of main landing gear mounts for corrosion (para 1-5-38). Measure inside diameter of bore. If measurement exceeds 0.940 INCH, replace mount.

END OF TASK

3-2-16. MAIN LANDING GEAR SHOCK STRUT INSTALLATION 3-2-16

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque 3/4 Drive	5120-00-902-3550
Socket, 1-3/4, 3/4 Drive	5120-00-199-7767
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Materials/Parts:

	Cotter Pin (2)
(E19)	Primer
(E42)	Oil
(E61)	Preservative
(E81)	Brush

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

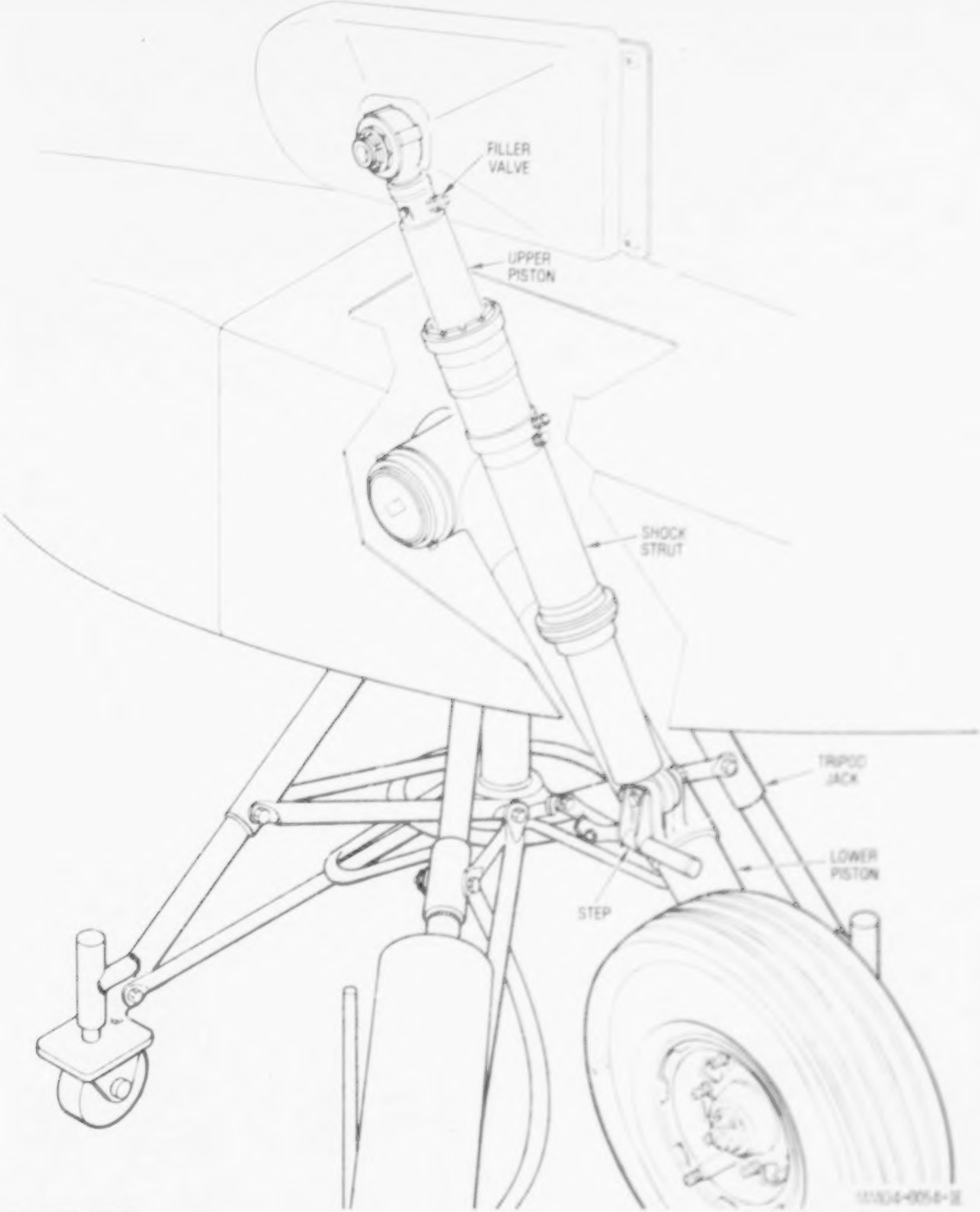
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors L135 and/or R135 opened, fairings L140 and/or R140 removed
1-7-12	Helicopter jacked (tripod jacks)
1-7-13	Main landing gear jacked (axle jack)

NOTE

Coat inside of main landing gear mount bore with primer (E20). Allow to dry thoroughly. Apply corrosion preventative compound (E61) to entire bore area, use brush (E81). Allow to dry approximately 4 hours.

GO TO NEXT PAGE



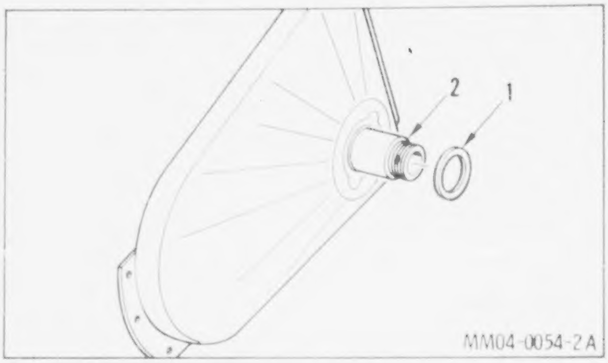
GO TO NEXT PAGE

3-2-16. MAIN LANDING GEAR SHOCK STRUT INSTALLATION (cont) 3-2-16

1. Install inboard washer (1) on mount shaft (2).

WARNING

Personal injury could occur during shock strut installation. Shock strut weighs about 45 pounds. To prevent possible injury, two persons are needed for lifting. If injury occurs, seek medical aid.

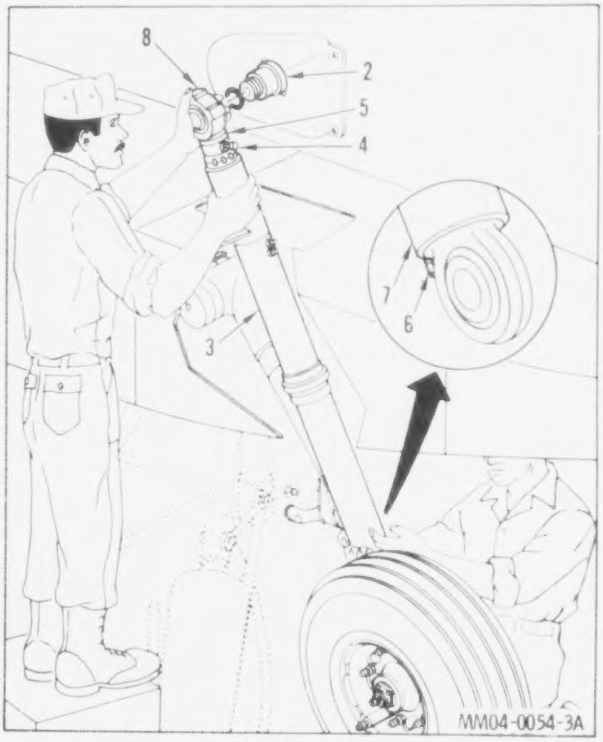


2. Lubricate mount shaft (2). Use lubricating oil (E42).

3. Guide shock strut (3) from under helicopter up through opening in walkway.

4. Position shock strut (3) so filler valve (4) in upper piston (5) is aft and facing up, and drain plug (6) in lower piston (7) is facing down.

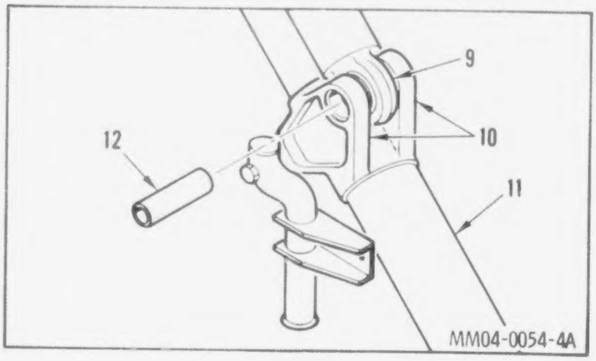
5. Slide strut upper rod end (8) on mount shaft (2).



6. Check alinement of strut rod end (9) and lugs (10).

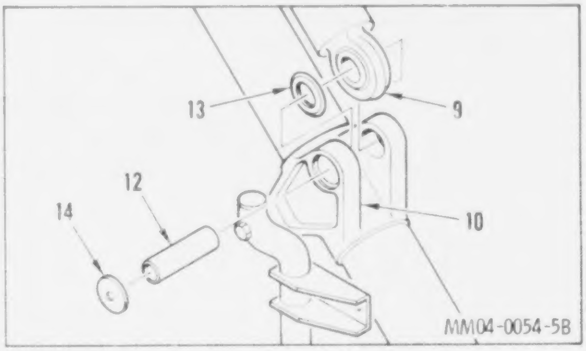
   a. Position rod end (9) between lugs (10).

   b. Raise or lower trailing arm (11) with tripod jack until pin (12) can be inserted.



GO TO NEXT PAGE

3-2-16. MAIN LANDING GEAR SHOCK STRUT INSTALLATION (cont) 3-2-16

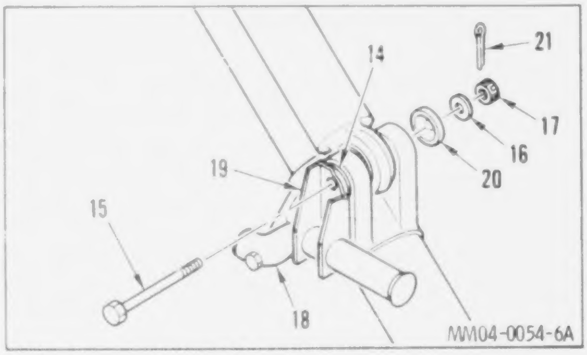


7. **Insert spacer (13) between outboard lug (10) and strut rod end (9).**

8. **Insert pin (12) through lugs (10), spacer (13), and strut rod end (9).**

9. **Install pin cover (14) in outboard lug (10).**

10. **Swing step (18) over pin cover (14).** Aline hole in bracket (19) with hole in pin cover (14).



11. **Install strut bolt (15), pin cover (20), washer (16), nut (17), and new cotter pin (21).** Torque nut (17) **35 to 40 INCH-POUNDS.**

NOTE

Install bolt, washer, and nut before primer dries.

   a. Coat strut bolt (15), washer (16), and nut (17). Use primer (E19). Install parts before primer dries.

   b. Insert strut bolt (15) through bracket (19), pin cover (14), lugs (10), and strut rod end (9).

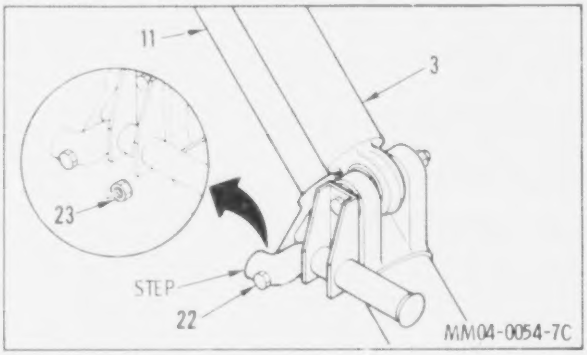
   c. Install pin cover (20) and washer (16).

   d. Hold bolt (15). Install nut (17).

   e. Torque nut (17) to **35 INCH-POUNDS.** Use 1/4 drive torque wrench.

   f. Increase torque to aline cotter pin holes, but do not exceed **40 INCH-POUNDS.**

   g. Install new cotter pin (21) through nut (17) and bolt (15).



14. **Tighten step bolt (22). Hold bolt (22). Torque nut (23) to 120 INCH-POUNDS.** Use 1/4 drive torque wrench.

GO TO NEXT PAGE

3-2-16. MAIN LANDING GEAR SHOCK STRUT INSTALLATION (cont) 3-2-16

14. **Install outboard washer (24) on mount shaft (2).**

15. **Install nut (25) on mount shaft (2).** Torque nut (25) to 208 to 333 FOOT-POUNDS. Use 3/4 drive torque wrench and 1-3/4 socket.

    a. Torque nut (25) to 208 FOOT POUNDS.

    b. Increase torque to aline cotter pin holes, but do not exceed 333 FOOT-POUNDS.

    c. Install new cotter pin (26) through nut (25) and mount shaft (2).

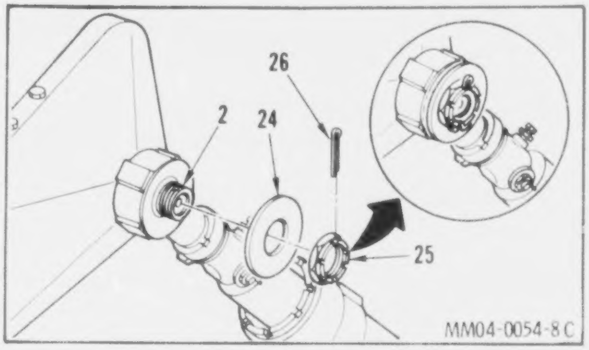
16. Inspect (TI).

17. **Remove axle jack from main landing gear aircraft adapter** (para 1-7-13).

18. **Service shock strut** (para 1-5-29 and 1-5-30).

19. **Remove tripod jacks** (para 1-7-12).

20. **Secure access doors L135 and/or R135 and fairings L140 and/or R140** (para 2-2-2).



END OF TASK

3-2-17. MAIN LANDING GEAR SHOCK STRUT AIR VALVE REPLACEMENT 3-2-17

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 3/8 Drive	5120-00-288-8865

Materials/Parts:

	Packing
(E8)	Lockwire
(E13)	Hydraulic Fluid

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

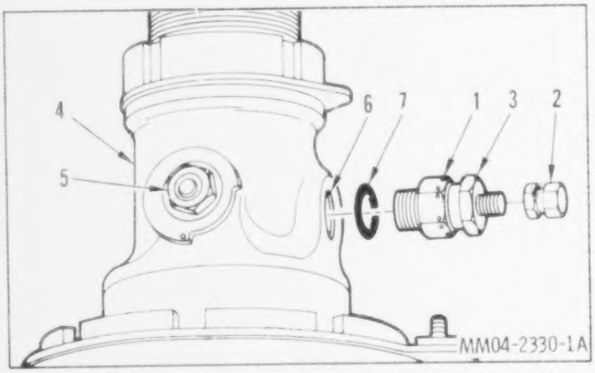
Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

WARNING

The shock strut contains high pressure nitrogen. Bleed off shock strut pressure through servicing valve before removing valve. Sudden release of high pressure nitrogen could cause personnel injury or damage to equipment. If injury occurs, seek medical aid.

1. Remove servicing valve (1).
   a. Remove air valve cap (2).
   b. Turn air valve outboard nut (3) counterclockwise. Allow high pressure nitrogen to bleed off and deflate shock strut (4).
   c. Remove lockwire from servicing valve (1) and bleed plug (5).
   d. Remove servicing valve (1) from shock strut air valve port (6).
   e. Remove and discard packing (7).



GO TO NEXT PAGE

3-2-17. MAIN LANDING GEAR SHOCK STRUT AIR VALVE REPLACEMENT (cont) 3-2-17

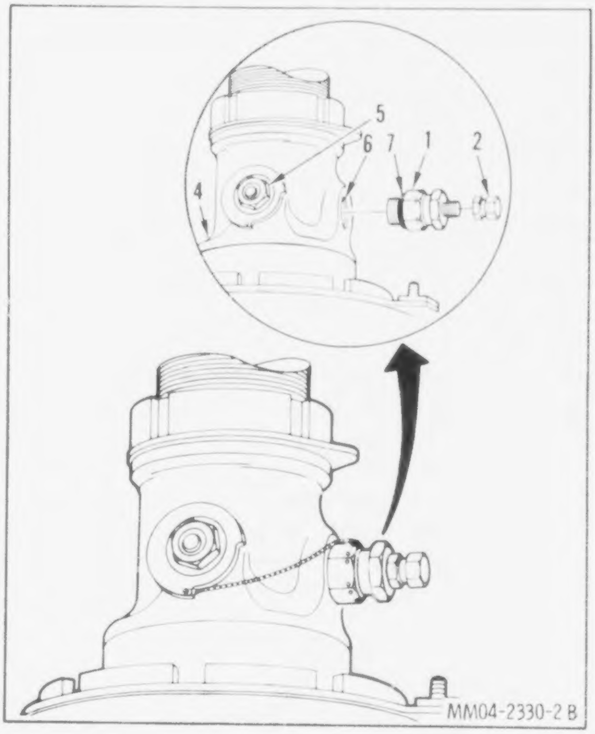
B. CLEANING

Clean shock strut air valve port (para 1-5-36).

C. INSPECTION

Check shock strut air valve port for damaged threads and cracks. None allowed.

D. INSTALLATION



1. **Install servicing valve (1).** Torque valve (1) to **60 INCH-POUNDS.**
   a. Lubricate new packing (7). Use hydraulic fluid (E13).
   b. Install packing (7) on valve (1).
   c. Install valve (1) in shock strut port (6).
   d. Torque valve (1) to **60 INCH-POUNDS.**
   e. Lockwire valve (1) to bleed plug (5). Use lockwire (E8).
   f. Service shock strut (4) with nitrogen (para 1-5-29).
   g. Install air valve cap (2).
2. **Inspect (TI).**

END OF TASK

3-2-18. UPPER MAIN LANDING GEAR SHOCK STRUT EXTERNAL LEAKAGE REPAIR 3-2-18

This task covers: A. DEFLATE SHOCK STRUT B. BLEED PLUG PACKING REPLACEMENT
C. CHECK VALVE PACKING REPLACEMENT

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft	5180-00-323-4692

Materials/Parts:

	Packing (2)
(E8)	Lockwire
(E13)	Hydraulic Fluid

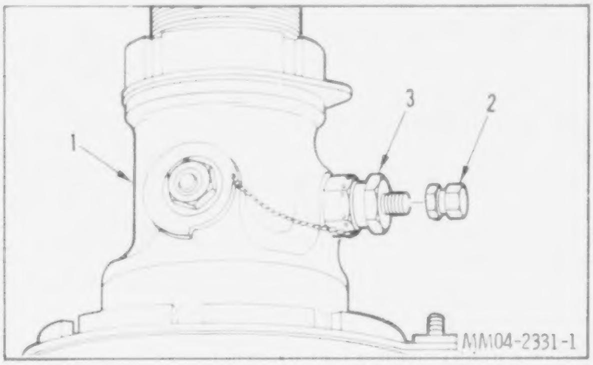
Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-12	Helicopter jacked (tripod jacks)

A. DEFLATE SHOCK STRUT



Deflate shock strut (1).

a. Remove air valve cap (2) from shock strut (1).

WARNING

The shock strut contains high pressure nitrogen. Bleed off shock strut pressure through servicing valve before removing valve. Sudden release of high pressure nitrogen could cause personnel injury or damage to equipment. If injury occurs, seek medical aid.

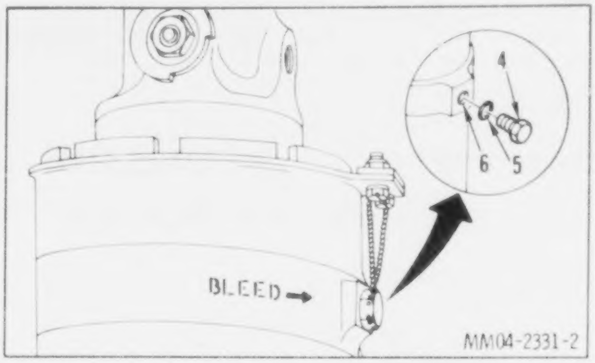
b. Turn air valve outboard nut (3) counterclockwise. Allow high pressure nitrogen to bleed off.

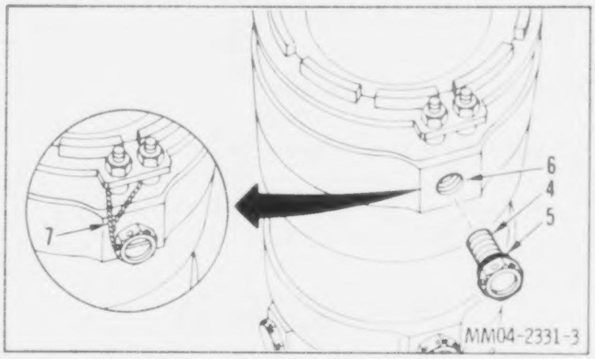
c. Turn air valve outboard nut (3) clockwise after nitrogen has bled off.

d. Install air valve cap (2).

GO TO NEXT PAGE

3-2-18. UPPER MAIN LANDING GEAR SHOCK STRUT EXTERNAL LEAKAGE REPAIR (cont) 3-2-18





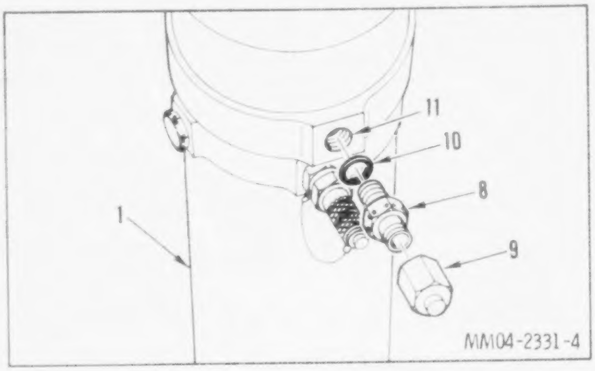
B. BLEED PLUG PACKING REPLACEMENT

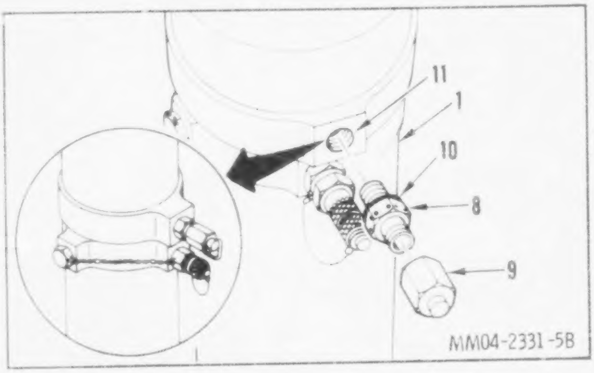
1. **Deflate shock strut** (para A).
2. **Remove bleeder plug (4).**
   - a. Remove lockwire from plug (4).
   - b. Remove plug (4) from port (6).
   - c. Remove and discard packing (5).
3. **Check bleeder plug (4) and bleeder plug port (6) for damage.**
4. **Install bleeder plug (4).**
   - a. Lubricate new packing (5). Use hydraulic fluid (E13).
   - b. Install packing (5) on plug (4).
   - c. Install plug (4) in port (6).
   - d. Lockwire plug (4). Use lockwire (E8).
5. **Inspect (TI).**
6. **Service shock strut (1) with fluid** (para 1-5-30).
7. **Service shock strut (1) with nitrogen** (para 1-5-29).

GO TO NEXT PAGE

3-2-18. UPPER MAIN LANDING GEAR SHOCK STRUT EXTERNAL LEAKAGE REPAIR (cont) 3-2-18

C. CHECK VALVE PACKING REPLACEMENT





1. Deflate shock strut (para A).
2. Remove check valve (8) from shock strut (1).
   - a. Remove lockwire from valve (8).
   - b. Remove cap (9).
   - c. Remove valve (8) from fill port (11).
   - d. Remove and discard packing (10).
3. Check cap (9), check valve (8), and check valve fill port (11) for damage.
4. Install check valve (8) in shock strut (1).
   - a. Lubricate new packing (10). Use hydraulic fluid (E14).
   - b. Install packing (10) on valve (8).
   - c. Install valve (8) in fill port (11).
   - d. Lockwire valve (8). Use lockwire (E8).
   - e. Install cap (9).
5. Inspect (TI).
6. Service shock strut (1) with fluid (para 1-5-30).
7. Service shock strut (1) with nitrogen (para 1-5-29).

END OF TASK

3-2-19. MAIN LANDING GEAR SHOCK STRUT CYLINDER EXTERNAL LEAKAGE REPAIR 3-2-19

This task covers: A. FLUID FILL COUPLING PACKING REPLACEMENT
B. OUTBOARD BLEED PLUG PACKING REPLACEMENT
C. INBOARD BLEED PLUG PACKING REPLACEMENT

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Hydraulic Repairer	5180-00-323-4891

Materials/Parts:

	Packing (2)
(E8)	Lockwire
(E13)	Hydraulic Fluid

Personnel Required:

68H10	Aircraft Pneudraulic Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-12	Helicopter jacked (tripod jack)
2-2-2	Access fairing L140 removed

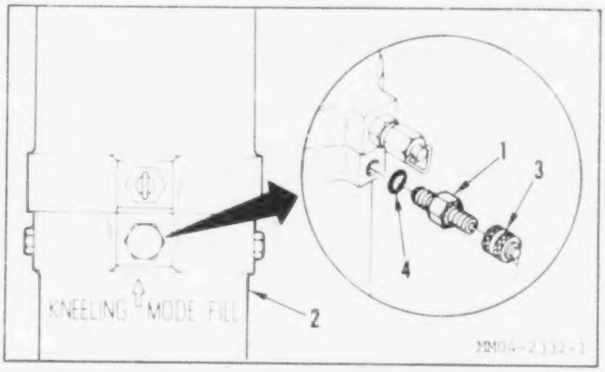
A. FLUID FILL COUPLING PACKING REPLACEMENT

1. **Remove fluid fill coupling (1) from shock strut (2).**

   a. Remove lockwire from coupling (1).

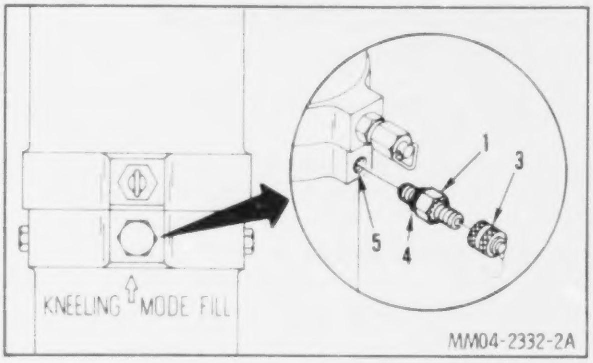
   b. Remove cap (3).

   c. Remove coupling (1). Remove and discard packing (4).



GO TO NEXT PAGE

3-2-19. MAIN LANDING GEAR SHOCK STRUT CYLINDER EXTERNAL LEAKAGE REPAIR (cont) 3-2-19



2. **Check fluid fill coupling (1) and kneeling port (5) for damage.** None allowed.

3. **Install fluid fill coupling (1).**

   a. Lubricate new packing (4). Use hydraulic fluid (E13).

   b. Install packing (4) on coupling (1).

   c. Install coupling (1) in port (5).

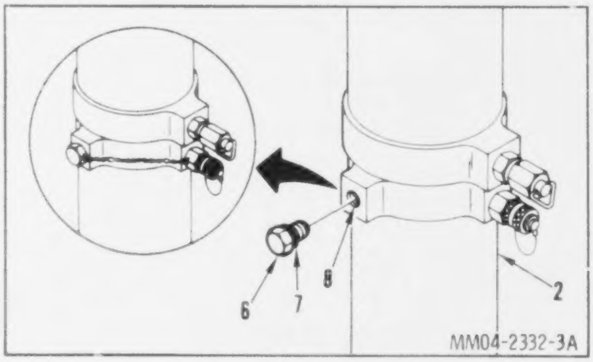
   d. Lockwire coupling (1). Use lockwire (E8).

   e. Install cap (3).

4. **Inspect (TI).**

5. **Service lower shock strut (2) with fluid** (para 1-5-30).

B. OUTBOARD BLEED PLUG PACKING REPLACEMENT



1. **Remove outboard bleed plug (6).**

   a. Place rags under strut (2) to catch hydraulic fluid spills.

   b. Remove lockwire from plug (6).

   c. Remove plug (6) from plug port (8).

   d. Remove and discard packing (7).

2. **Check bleed plug (6) and plug port (8) for damage.** None allowed.

3. **Install outboard bleed plug (6).**

   a. Lubricate new packing (7). Use hydraulic fluid (E13).

   b. Install packing (7) on plug (6).

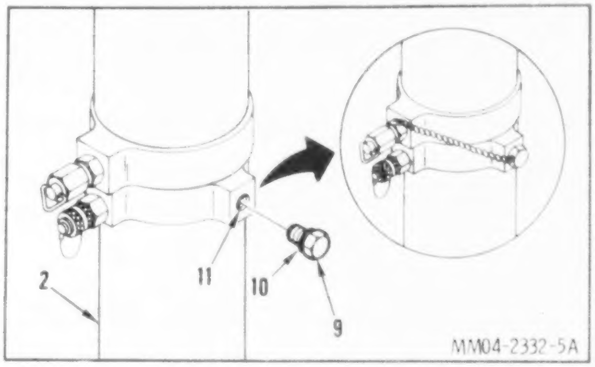
   c. Install plug (6) in plug port (8).

   d. Lockwire plug (6). Use lockwire (E8).

4. **Inspect (TI).**

GO TO NEXT PAGE

C. INBOARD BLEED PLUG PACKING REPLACEMENT



1. **Remove inboard plug (9).**
   a. Place rags under strut (2) to catch hydraulic fluid spills.
   b. Remove lockwire from plug (9).
   c. Remove plug (9) from port (11).
   d. Remove and discard packing (10).
2. **Check inboard plug (9) and port (11) for damage.** None allowed.
3. **Install inboard plug (9).**
   a. Lubricate new packing (10). Use hydraulic fluid (E13).
   b. Install packing (10) on plug (9).
   c. Install plug (9) in port (11).
   d. Lockwire plug (9). Use lockwire (E8).
4. **Inspect (TI).**
5. **Service shock strut (2)** (para 1-5-30).

END OF TASK

3-2-20. MAIN LANDING GEAR SHOCK STRUT CHECK VALVE REMOVAL/INSTALLATION (cont) 3-2-20

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

	Packing
(E13)	Hydraulic Fluid
(E29)	Lockwire

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-13	Helicopter jacked (axle jack)
2-2-2	Access fairings L140, R140 removed

A. REMOVAL

WARNING

The shock strut contains high pressure nitrogen. Bleed off shock strut presure through servicing valve before removing valve. Sudden release of high pressure nitrogen could cause personnel injury or damage to equipment. If injury occurs, seek medical aid.

NOTE

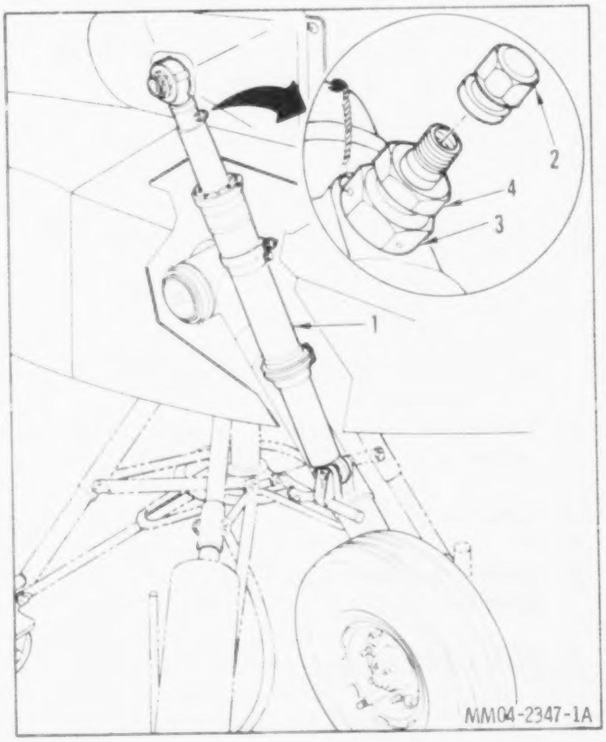
Remove lockwire from air valve if installed.

1. Deflate shock strut (1).

   a. Remove valve cap (2).

   b. Hold air valve (3) and slowly turn nut (4) counterclockwise to bleed off all pressure.

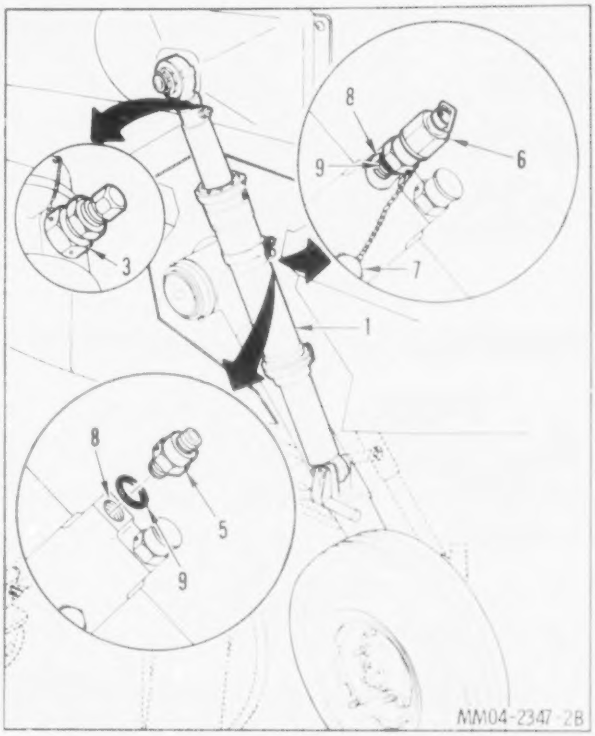
   c. Install valve cap (2).



GO TO NEXT PAGE

3-2-20. MAIN LANDING GEAR SHOCK STRUT CHECK VALVE REMOVAL/INSTALLATION (cont)

2. **Remove check valve (5) from shock strut (1).**
   a. Remove valve cap (6).
   b. Remove lockwire from bolt (7) and valve (5).
   c. Remove valve (5) from port (8).
   d. Remove and discard packing (9).
3. **Check port (8) and check valve (5) for damage.** None allowed.



B. **INSTALLATION**

1. **Install check valve (5) in port (8).**
   a. Lubricate new packing (9). Use hydraulic fluid (E13).
   b. Install new packing (9) on valve (5).
   c. Install valve (5) into port (8).
   d. Lockwire valve (5) to bolt (7). Use lockwire (E29).
   e. Install valve cap (6).
2. **Lockwire air valve (3) and check valve (5).** Use lockwire (E29).
3. **Inspect (TI).**
4. **Service shock strut (1)** (para 1-5-23).
5. **Remove axle jack** (para 1-7-13).
6. **Secure access fairing L140, R140** (para 2-2-2).

END OF TASK

3-2-21. MAIN LANDING GEAR SHOCK STRUT UPPER ROD END REPLACEMENT (AVIM) 3-2-21

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION E. ADJUSTMENT

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Spanner	5120-00-513-1754
Wrench, Torque, 3/8 Drive	5120-00-821-3441

Materials/Parts:

(E3)	Lockwire
(E68)	Brush
(E77)	Lubricant, Antiseize

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

A. REMOVAL

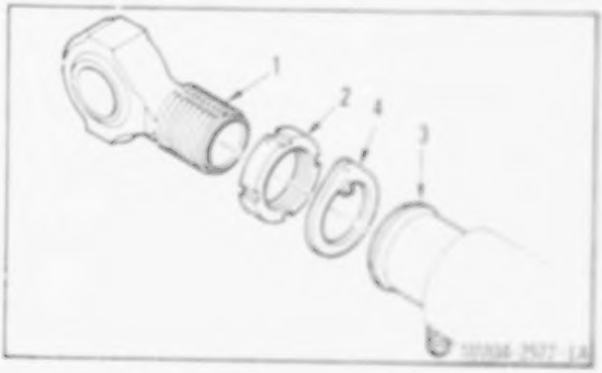
Remove shock strut rod end (1).

a. Remove and discard lockwire.

b. Loosen jam nut (2). Use spanner wrench.

c. Unscrew rod end (1) from shock strut (3).

d. Remove washer (4) and nut (2) from rod end (1).



B. CLEANING

Wipe rod end, jam nut, and washer with a clean rag.

C. INSPECTION

Check jam nut and shock strut for thread damage or dents. Check washer for dishing, bending, or scoring. None allowed.

GO TO NEXT PAGE

3-2-21. MAIN LANDING GEAR SHOCK STRUT UPPER ROD END REPLACEMENT (AVIM) (cont) 3-2-21

D. INSTALLATION

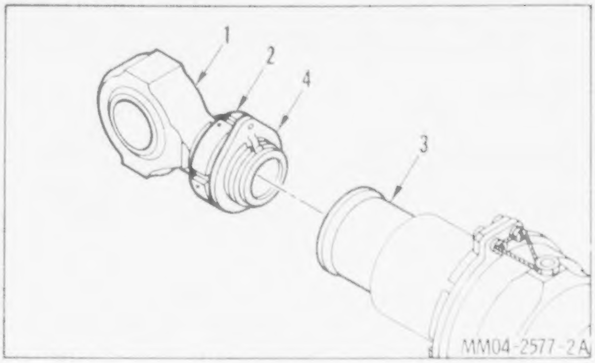
Install rod end (1).

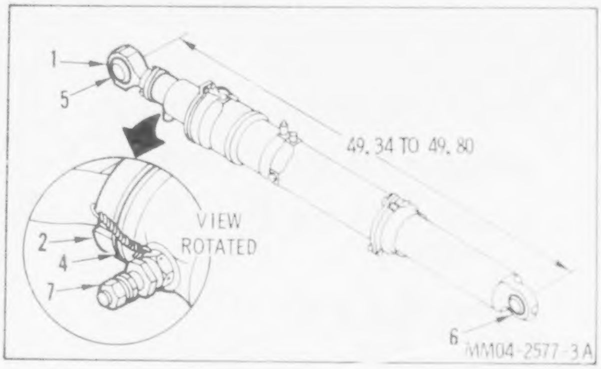
a. Check new rod end (1) for thread damage or dents.

b. Install nut (2) and washer (4) on new rod end (1).

c. Lubricate threads of rod end (1). Use antiseize lubricant (E77) and brush (E68).

d. Screw rod end (1) into shock strut (3).





E. ADJUSTMENT

1. **Adjust rod end (1).** Torque jam nut (2) to **600 INCH-POUNDS.**

   a. Adjust upper rod end (1) to a fully extended unpressurized shock strut length of **49.34 to 49.80 INCHES** measured from center of upper rod end bearing (5) to center of shock strut lower bearing (6).

   b. Torque nut (2) to **600 INCH-POUNDS.**

   c. Lockwire nut (2) to washer (3) and air valve (7). Use lockwire (E3).

2. **Inspect (TI).**

END OF TASK

3-2-22. MAIN LANDING GEAR SHOCK STRUT UPPER GLAND SEAL REPLACEMENT (AVIM) 3-2-22

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Pneudraulic Repairer	5180-00-323-4891
Wrench, Torque, 1/4 Drive	5120-00-117-4832
Wrench, Strap	5120-00-242-3249
Wrench, Spanner	7-363100021
Handle, Socket Wrench, 1/2 Drive	5120-00-221-7958

Materials/Parts:

	Seal
	Packing
	Retaining Ring (2)
	Scraper
(E13)	Hydraulic Fluid
(E19)	Primer
(E29)	Lockwire
(E32)	Cloth, Lint-Free
(E68)	Brush
(E77)	Lubricant, Antiseize

Personnel Required:

68H20	Aircraft Pneudraulic Repairer
66R30	Inspector/Supervisor

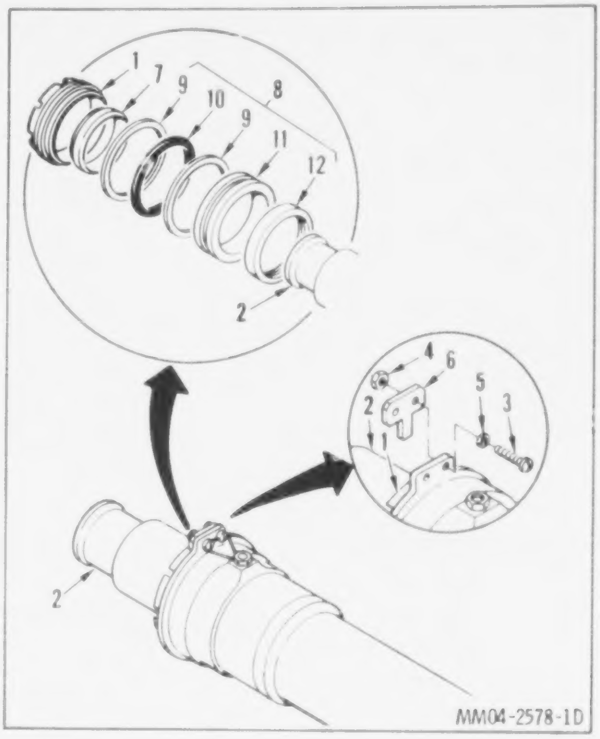
Equipment Conditions:

Ref	Condition
3-2-21	Rod end removed
3-2-17	Air valve removed
3-2-19	Bleeder plug removed

GO TO NEXT PAGE

3-2-22. MAIN LANDING GEAR SHOCK STRUT UPPER GLAND SEAL REPLACEMENT (AVIM) (cont)

A. REMOVAL



1. **Remove gland nut (1) from shock strut (2).**
   a. Remove lockwire from screws (3).
   b. Hold two screws (3). Remove two nuts (4).
   c. Remove two screws (3) and washers (5).
   d. Remove lock (6) from nut (1) and strut (2).
   e. Hold strut (2) with strap wrench. Remove nut (1). Use spanner wrench and 1/2 inch drive handle.
   f. Remove and discard scraper (7).
2. **Remove upper bearing and seal (8).**
   a. Remove and discard two retaining rings (9) and packing (10).
   b. Remove bearing (11) and seal (12).
   c. Discard seal (12).

B. CLEANING

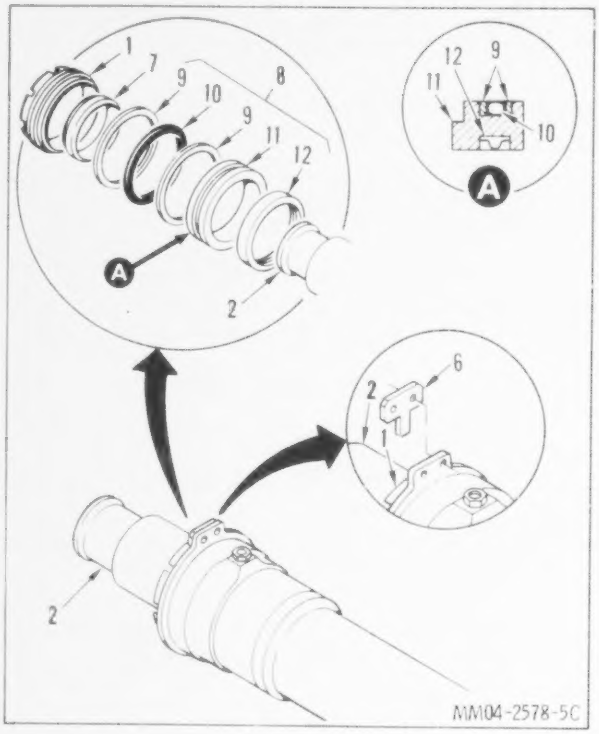
Wipe shock strut, lock, and gland nut with a clean lint-free cloth (E32).

GO TO NEXT PAGE

3-2-22. MAIN LANDING GEAR SHOCK STRUT UPPER GLAND SEAL REPLACEMENT (AVIM) (cont) 3-2-22

C. INSPECTION

Check gland nut and shock strut for damaged threads, dents, or other conditions which may cause leakage. None allowed.

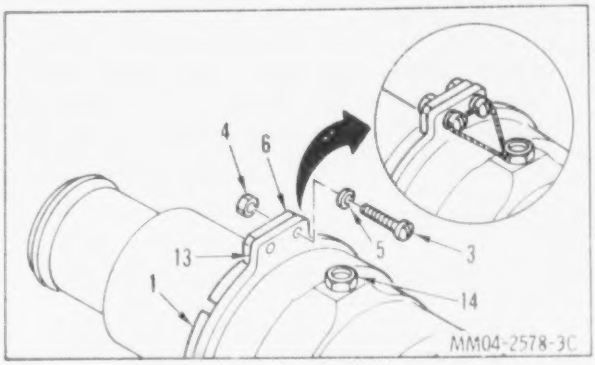


D. INSTALLATION

1. **Install upper bearing and seal (8).**
   a. Lubricate new seal (12). Use hydraulic fluid (E13).
   b. Install seal (12) in bearing (11) inner groove.
   c. Lubricate new packing (10) and two new rings (9). Use hydraulic fluid (E13).
   d. Install new packing (10) and rings (9) in bearing (11) outer groove.
   e. Install bearing and new seal (8) into strut (2).
2. **Install gland nut (1) with new scraper (7) on shock strut (2).**
   a. Lubricate new scraper (7). Use hydraulic fluid (E13).
   b. Install scraper (7) in inside groove of nut (1).
   c. Lubricate threads of nut (1). Use antiseize lubricant (E77) and brush (E68).
   d. Slide nut (1), with scraper (7) installed, on strut (2). Turn nut (1) until it bottoms.
   e. Back off nut (1) until lock (6) will aline with nearest slot in nut.

GO TO NEXT PAGE

3-2-22. MAIN LANDING GEAR SHOCK STRUT UPPER GLAND SEAL REPLACEMENT (AVIM) (cont)



3. **Install lock (6).** Torque two nuts (4) to **20 INCH-POUNDS.**
   a. Prime surfaces of lock (6). Use primer (E19) and brush (E68).
   b. Install lock (6) on nut (1) while primer is still wet.
   c. Coat surfaces of two screws (3), washers (5), and nuts (4). Use primer (E19) and brush (E68).
   d. Install two screws (3), washers (5), and nuts (4) in alined holes in lock (6) and strut boss (13) while primer is still wet.
   e. Torque two nuts (4) to **20 INCH-POUNDS.**
   f. Lockwire two screws (3) to bleed plug (14). Use lockwire (E29).
4. **Inspect (TI).**
5. **Install air valve** (para 3-2-17).
6. **Install rod end** (para 3-2-21).
7. **Install bleeder plug** (para 3-2-19).

END OF TASK

3-2-23. MAIN LANDING GEAR NINE-BOLT WHEEL VALVE REPLACEMENT 3-2-23

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Repair Tool, Pneumatic Tire Valve	5120-00-308-3809
Inflator, Tire	4920-00-781-8423
Cart, Nitrogen	3655-00-534-0564
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Materials/Parts:

	Packing
(E13)	Hydraulic Fluid
(E18)	Compound, Leak-Detection

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-13	Wheel jacked (axle jack)

A. REMOVAL

WARNING

Do not remove valve core from valve stem until all nitrogen is out of tire. Pressure on loosened core could cause core to be blown from stem and injure personnel. If injury occurs, seek medical aid.

1. Remove valve (1).

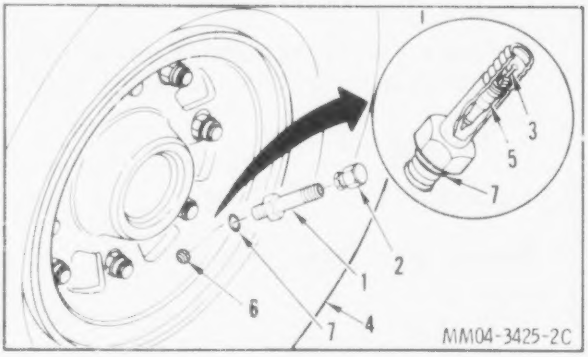
   a. Remove valve cap (2).

   b. Press valve core end (3) to deflate tire (4).

   c. Remove valve core (5). Use valve repair tool.

   d. Remove valve (1) from port (6).

   e. Remove and discard packing (7).



GO TO NEXT PAGE

3-2-23. MAIN LANDING GEAR NINE-BOLT WHEEL VALVE REPLACEMENT (cont) 3-2-23

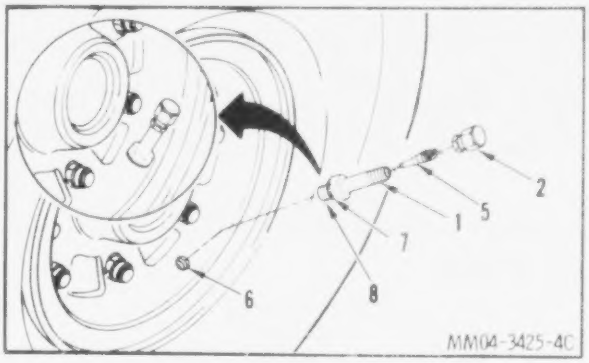
B. CLEANING

Clean lower threads (para 1-5-36).

C. INSPECTION

Check threads and area around hole for cracks and distortions. None allowed.

D. INSTALLATION



1. **Install valve (1).** Torque valve (1) to **60 INCH-POUNDS.**
   - a. Lubricate threads (8) of valve (1) and packing (7). Use hydraulic fluid (E13).
   - b. Install packing (7) on valve (1).
   - c. Install valve core (5) in valve (1). Use valve repair tool.
   - d. Install valve (1) in port (6).
   - e. Torque valve (1) to **60 INCH-POUNDS.**
   - f. Inflate tire to **105 psi.** Use inflator and nitrogen cart.
   - g. Check for leaks around valve (1). Use leak-detection compound (E18).
   - h. Install cap (2).
3. **Inspect (TI).**
4. **Remove axle jack** (para 1-7-13).

END OF TASK

3-2-24. MAIN LANDING GEAR NINE-BOLT WHEEL TIRE REMOVAL 3-2-24

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Repair Tool, Pneumatic Tire Valve	5120-00-308-3809
Breaker, Tire Bead	4910-00-856-0586

Personnel Required:

67R10 Attack Helicopter Repairer

References:

TM 55-2620-200-24
TM 55-1500-204-25/1

Equipment Conditions:

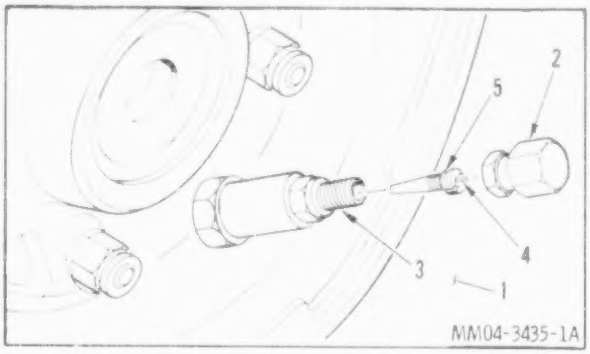
Ref	Condition
3-2-6	Main landing gear wheel and tire removed

A. REMOVAL

WARNING

- Do not take wheel apart before deflating tire. Pressure on loosened nuts could cause nuts to break loose and wheel halves to separate. Persons nearby could be injured by flying parts. If injury occurs, seek medical aid.
- Do not remove valve core from valve stem until all nitrogen is out of tire. Pressure on loosened core could cause core to be blown from stem and cause injury to personnel. If injury occurs, seek medical aid.

1. Deflate tire (1).
   a. Remove valve cap (2) from valve stem (3).
   b. Press valve core pin (4) to deflate tire (1).
   c. Remove valve core (5). Use valve repair tool.



GO TO NEXT PAGE

3-2-24. MAIN LANDING GEAR NINE-BOLT WHEEL TIRE REMOVAL (cont) 3-2-24

2. **Break tire bead (6).** Use tire bead breaker.

3. **Remove wheel halves (7) and (8) from tire (1).**

   a. Hold nine bolts (9). Remove nine nuts (10).

   b. Remove nine washers (11), bolts (9), and washers (12).

   c. Remove wheel halves (7) and (8) from tire (1).

   d. Remove and discard packing (13).

B. CLEANING

1. **Remove caulking from around bolt holes** (para 1-5-36).

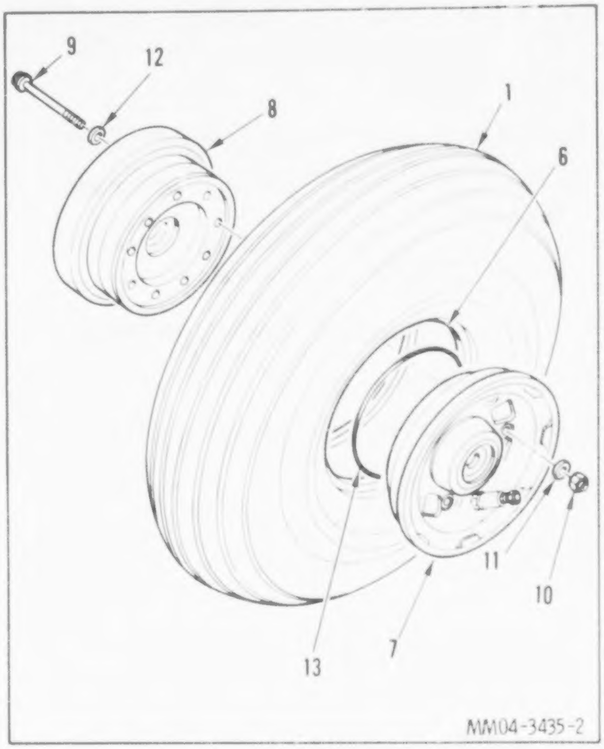
2. **Clean dirt and grease from wheel halves** (para 1-5-36).

C. INSPECTION

1. **Check wheel halves for cracks, dents, or nicks** (TM 55-1500-204-25/1).

2. **Check wheel halves for corrosion** (para 1-5-38).

3. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cord, and contamination** (TM 55-2620-200-24).



END OF TASK

3-2-25. MAIN LANDING GEAR NINE-BOLT WHEEL TIRE INSTALLATION 3-2-25

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Repair Tool, Pneumatic Tire Valve	5120-00-308-3809
Inflator, Tire	4920-00-781-8423
Cart, Nitrogen	3655-00-534-0564
Cage, Safety	Local Manufacture (TM 55-1520-204-25/1)
Wrench, Torque, 3/8 Drive	5120-00-288-8865

Materials/Parts:

	Packing
(E5)	Grease
(E17)	Compound, Thread
(E18)	Compound, Leak-Detection
(E77)	Lubricant, Antiseize

Personnel Required:

67R10 Attack Helicopter Repairer (2)
66R30 Inspector/Supervisor

References:

TM 55-1520-204-25/1
TM 55-2620-200-24

Equipment Conditions:

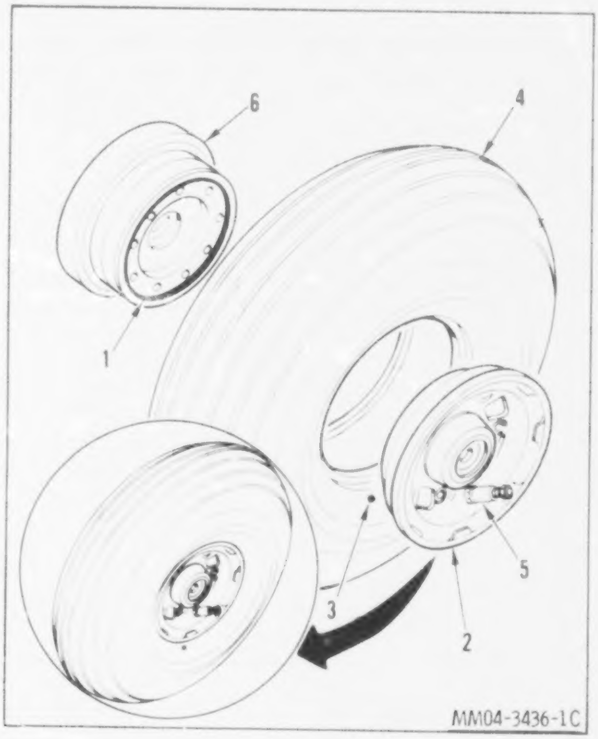
Ref	Condition
3-2-11	Main landing gear wheel bearings packed

1. **Lubricate new wheel packing (1).** Use grease (E5).

2. **Install packing (1) on shoulder of wheel half (6).**

3. **Position wheel half (2) in tire.** Aline dot (3) on tire (4) with valve (5).

4. **Position wheel half (2) in tire (4).** Aline bolt holes in wheel halves (2) and (6).



MM04-3436-1C

GO TO NEXT PAGE

5. **Lubricate threads of nine bolts (7).** Use thread compound (E17).

6. **Lubricate bearing surfaces of nine bolts (7), washers (8) and (9), and nuts (10).** Use antiseize lubricant (E77).

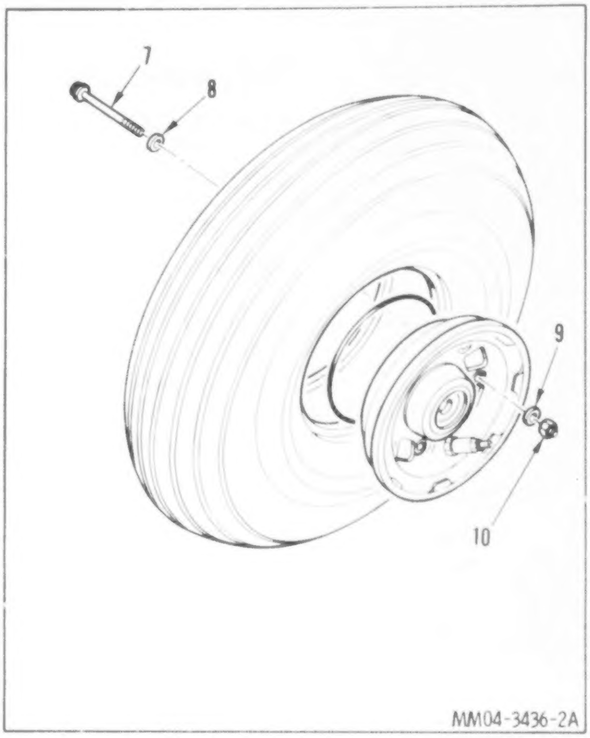
7. **Install nine bolts (7), washers (8) and (9), and nuts (10).** Torque nuts (10) to **300 INCH-POUNDS.**

   a. Place countersunk washers (8) on bolts (7) with countersink against bolt heads.

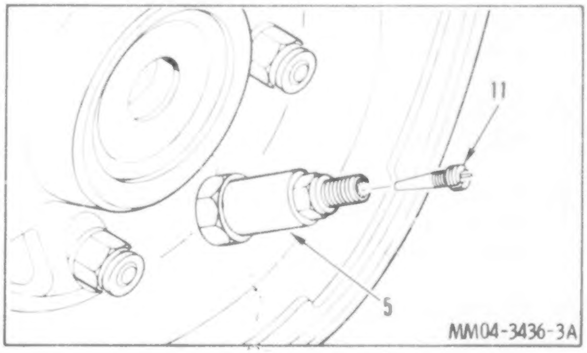
   b. Install nine bolts (7) with nine washers (8) through bolt holes in wheel halves.

   c. Hold bolts (7). Install nine washers (9) and nuts (10).

   d. Torque nine nuts (10) to **300 INCH-POUNDS.**



7. **Install serviceable valve core (11) in valve (5).** Use valve repair tool.

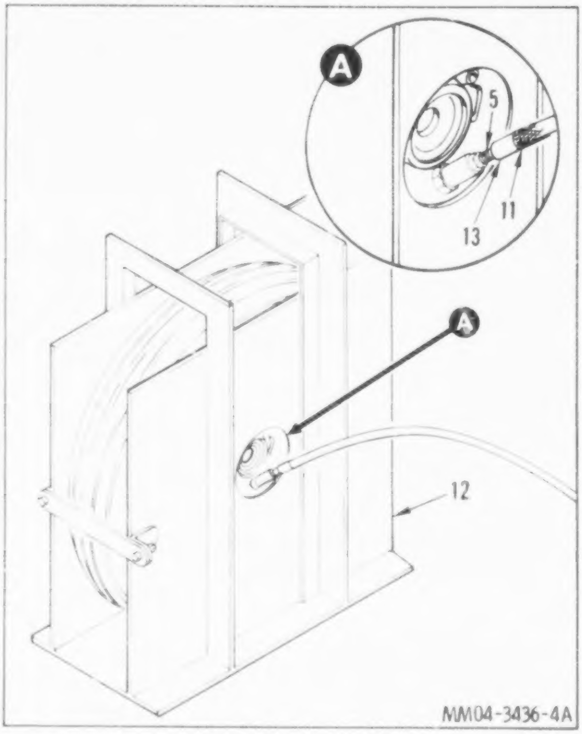


GO TO NEXT PAGE

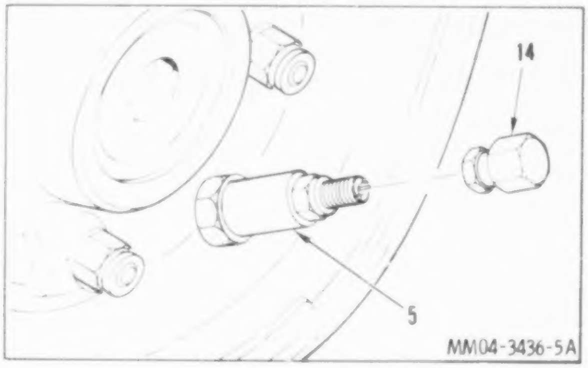
WARNING

- When tire is being inflated, wheel and tire must be in safety cage. The tire could blow off wheel, or the wheel halves could separate. Flying parts could injure personnel. If injury occurs, seek medical aid.
- Allow 30 minutes before removing inflated tire from safety cage.

8. Place wheel and tire in safety cage (12) (TM 55-1520-204-25/1).
9. Inflate tire to 105 psi.
   a. Connect hose (11) and chuck (13) to valve (5).
   b. Inflate tire to 105 PSI. Use inflator and nitrogen cart.
   c. Shut off inflator.
   d. Disconnect chuck (13) from valve (5).
   e. Before removing from safety cage, let wheel and tire sit for 30 minutes.
10. Remove wheel and tire from safety cage.
11. Check wheel and tire for leaks. Check valve (5) and around wheel rim. Use leak detection compound (E18).
12. Install valve cap (14) on valve (5).
13. Inspect (TI).



MM04-3436-4A



MM04-3436-5A

END OF TASK

SECTION III. TAIL LANDING GEAR MAINTENANCE

3-3-1. TAIL LANDING GEAR INSPECTION 3-3-1

NOTE

Refer to para 7-2-1 for additional limits and corrective actions.

A. TAIL LANDING GEAR

1. Check components for damage and loose mounting.

2. Check for loose, missing, and damaged mounting hardware.

3. Check wheel fork for cracks, looseness, or misalinement.

4. Check tire for tread damage or uneven wear (TM 55-2620-200-24).

5. Check wheel for cracks, looseness, deformation, and hub grease leakage. Check wheel halves for cracks, dents, nicks, and corrosion (TM 55-1500-204-25/1).

6. Check lock actuator and hydraulic lines for external fluid leakage.

7. Check proximity switch and wiring for cracked, broken, and burned insulation. Check switch bracket and target for looseness or misalinement.

8. Check shock strut for external fluid leakage and for cracks, looseness, and misalinement.

9. Check shock strut for proper extension. Strut extends 30.73 to 30.97 INCHES with tailwheel clear of ground.

10. Check shock strut rod end and bolt hole clearance; maximum 0.001-INCH clearance (or elongation) allowed.

11. Check trailing arms for cracks, distortion, and loose mounting.

12. Check trailing arm pivot bolt hole clearance; maximum 0.002-INCH clearance (or elongation) allowed.

B. GENERAL (FITTINGS, CASTINGS,AND FORGINGS)

1. If sharp edges can be blended and damage dces not interfere with operational characteristics of affected components, nicks, scratches, and gouges which do not develop into cracks are generally acceptable .

2. If blending is required, remove minimal material to smooth off sharp edges .

3. Cracks are generally not acceptable. Use approved nondestructive testing methods to determine if cracks exist.

END OF TASK

3-3-2. TAIL LANDING GEAR PROXIMITY SWITCH REPLACEMENT 3-3-2

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

	Switch
(E3)	Lockwire

Personnel Required:

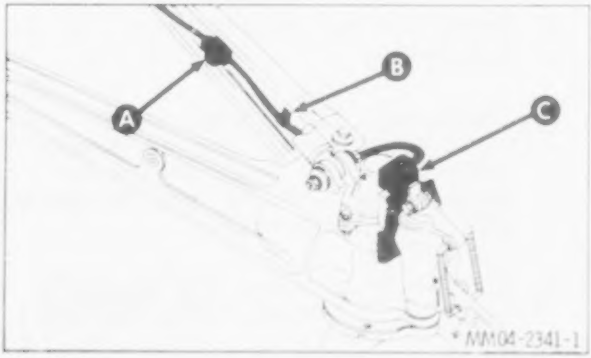
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

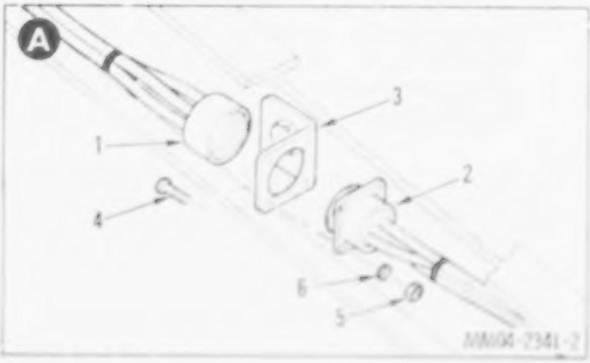
References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed





A. REMOVAL

1. Detach connector P760 (1) from connector J760 (2).

2. Remove connector J760 (2) from bracket (3).

   a. Hold four screws (4). Remove four nuts (5).

   b. Remove four washers (6) and screws (4).

   c. Remove connector (2) from bracket (3).

GO TO NEXT PAGE

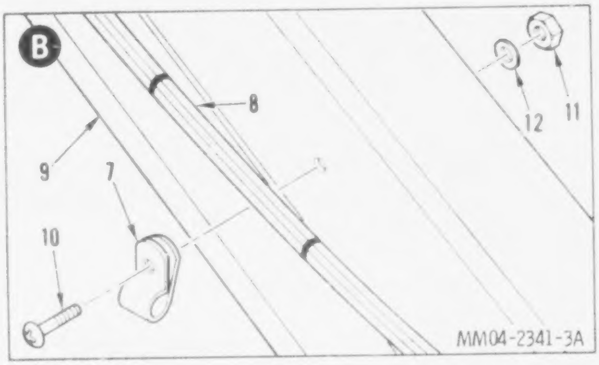
3-3-2. TAIL LANDING GEAR PROXIMITY SWITCH REPLACEMENT (cont)

3. **Remove clamp (7) from cable (8) and trailing arm (9).**

   a. Hold screw (10). Remove nut (11).

   b. Remove washer (12) and screw (10).

   c. Remove clamp (7) from cable (8).



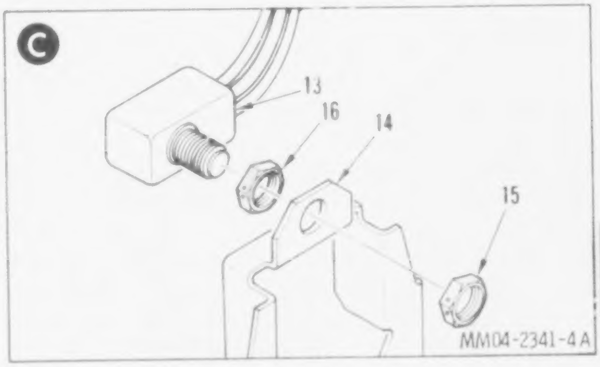
4. **Remove switch (13) from bracket (14).**

   a. Remove lockwire from nut (15) and (16).

   b. Hold switch (13). Remove nut (15).

   c. Remove switch (13) with nut (16) from bracket (14).

   d. Remove nut (16) from switch (13).



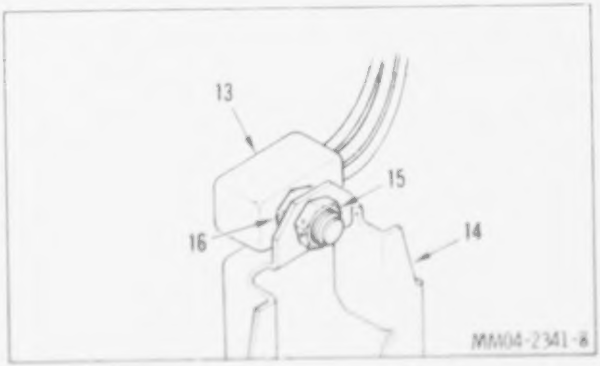
B. INSTALLATION

1. **Install switch (13) on bracket (14).**

   a. Install nut (16) on switch (13).

   b. Install switch (13) with nut (16) on bracket (14).

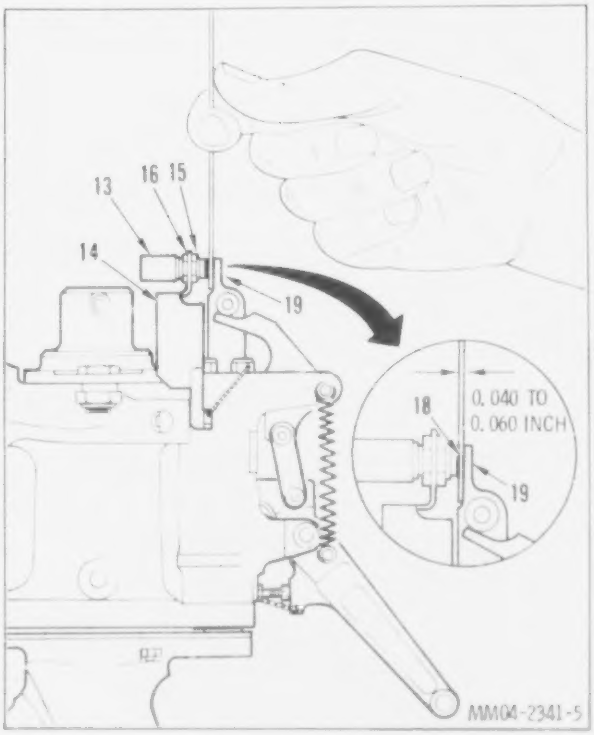
   c. Install nut (15) on switch (13). Do not tighten nuts.



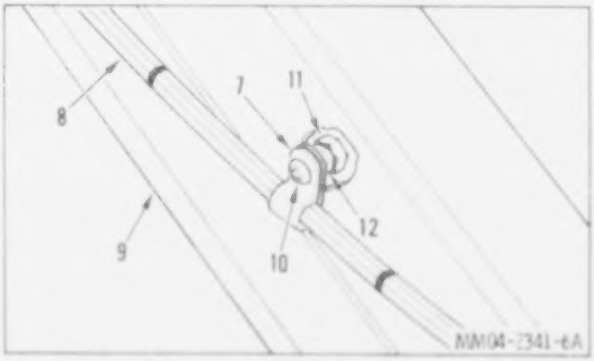
GO TO NEXT PAGE

3-3-2. TAIL LANDING GEAR PROXIMITY SWITCH REPLACEMENT (cont) 3-3-2

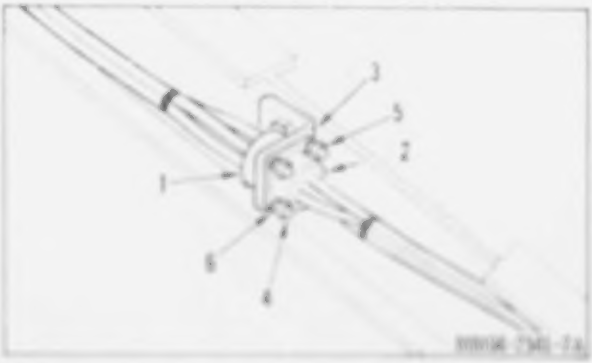
2. Adjust switch (13) on bracket (14) for 0.040 to 0.060-INCH gap between switch sensor (18) and target (19).
   a. Adjust nuts (15) and (16) to move switch (13) to obtain 0.040 to 0.060-INCH gap between sensor (18) kand target (19).
   b. Tighten nuts (15) and (16).
   c. Lockwire nut (15) to nut (16). Use lockwire (E3).



3. Mount clamp (7) on cable (8).
4. Install clamp (7) on trailing arm (9).
   a. Install screw (10) through clamp (7) and arm (9).
   b. Hold screw (10). Install washer (12) and nut (11).



5. Install connector J760 (2) on bracket (3).
   a. Aline connector (2) on bracket (3).
   b. Install four screws (4) and washers (6).
   c. Hold screws (4). Install four nuts (5).
6. Attach connector P760 (1) to connector J760 (2).
7. Inspect (TI).
8. Perform tail landing gear operational check (TM 55-1520-238-T).



END OF TASK

3-3-3. TAIL LANDING GEAR LOCK ACTUATOR HANDLE REPLACEMENT 3-3-3

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION E. ADJUSTMENT

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Pliers, Retaining Ring	5120-00-088-9393

Materials/Parts:

(E8) Lockwire

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. **Remove lock actuator handle (1) from tail wheel lock actuator (2).**

   a. Remove two springs (3) from handle (1).

   b. Remove two retaining rings (4) and two washers (5) from pin (6).

   c. Remove pin (6) from handle (1) and linkage attach point (7)

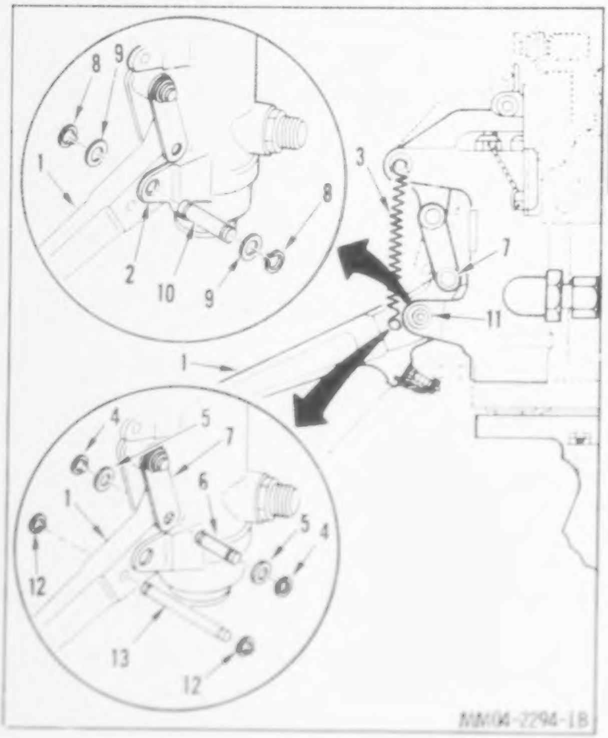
   d. Remove two retaining rings (8) and two washers (9) from pin (10).

   e. Remove pin (10) from handle pivot point (11).

   f. Lift out handle (1).

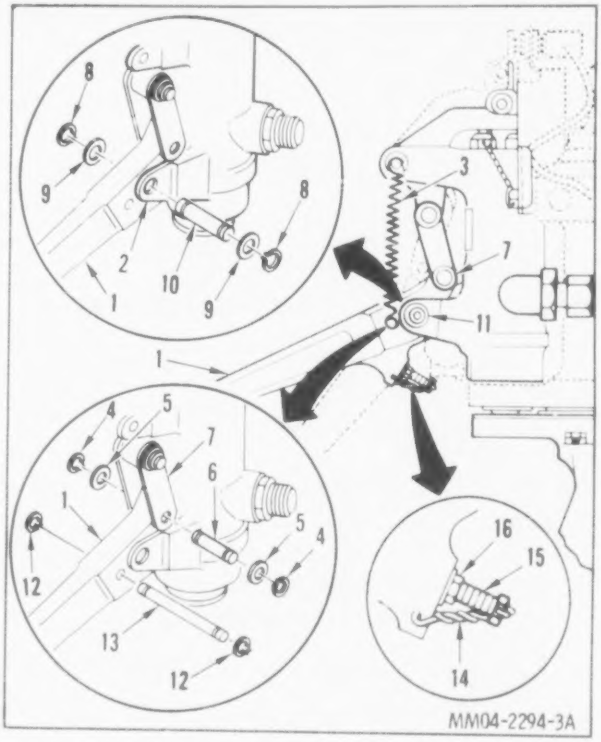
   g. Remove two retaining rings (12) from pin (13).

   h. Remove pin (13) from handle (1).



GO TO NEXT PAGE

3-3-3. TAIL LANDING GEAR LOCK ACTUATOR HANDLE REPLACEMENT (cont) 3-3-3



2. **Remove attaching hardware from lock actuator handle (1).**

   a. Remove lockwire (14) from bolt (15).

   b. Hold bolt (15). Unscrew nut (16).

   c. Remove bolt (15).

B. CLEANING

Wipe attach points of handle with a clean rag.

C. INSPECTION

1. **Check handle for evidence of binding or distortion.** None allowed.

2. **Check actuator for cracks or leaks.** None allowed.

D. INSTALLATION

1. **Install bolt (15).** Screw bolt (15) into handle (1) as far as it will go.

2. **Place lock actuator handle (1) on tail wheel lock actuator (2).**

3. **Install pin (10) through tail wheel lock actuator (2). Install two washers (9) at pivot point (11).** Install two rings (8) on pin (10). Use retaining ring pliers.

4. **Install pin (6) through attach point (7). Install two washers (5) on pin (6) at attach point (7).** Install rings (4) on each end of pin (6). Use retaining ring pliers.

5. **Install pin (13) through lock actuator handle (1).**

   a. Install two rings (12) on pin (13). Use retaining ring pliers.

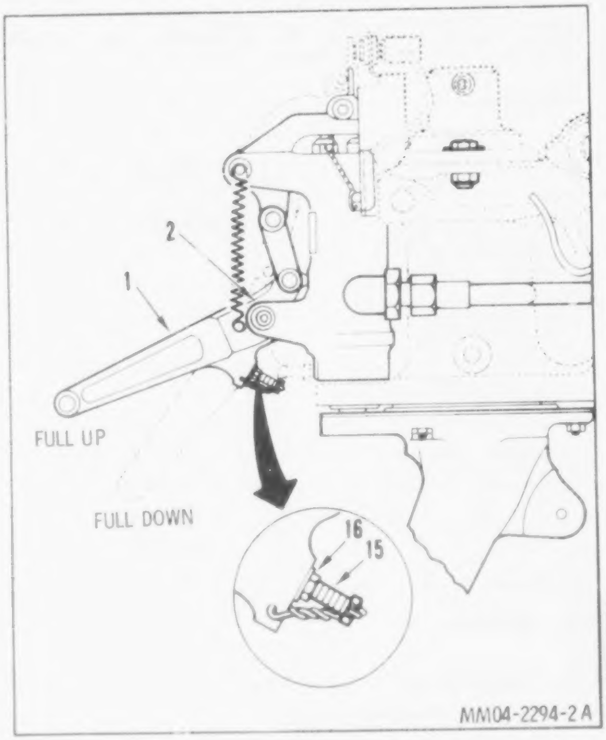
   b. Install two springs (3) on pin (13).

GO TO NEXT PAGE

3-3-3. TAIL LANDING GEAR LOCK ACTUATOR HANDLE REPLACEMENT (cont) 3-3-3

E. **ADJUSTMENT**

1. **Adjust lock actuator handle (1).**
    a. Lower handle (1) until it reaches a position from which it will not automatically reverse.
    b. Back out bolt (15) until bolt head reaches actuator (2).
    c. Turn bolt (15) into handle (1) five turns.
    d. Hold bolt (15). Tighten jam nut (16).
    e. Raise and lower handle (1) to check for proper operation.
    f. Lockwire bolt (15). Use lockwire (E8).
2. **Inspect (TI).**



END OF TASK

3-3-4. TAIL LANDING GEAR LOCK ACTUATOR TARGET REPLACEMENT 3-3-4

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-542-4489
Crowfoot Attachment, 3/4, 3/8 Drive	5120-00-184-8400
Wrench, Strap	5120-00-242-3249
Pail, Utility	7240-00-160-0455

Materials/Parts:

(E8)	Lockwire
(E79)	Lubricant, Solid Film

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-14	Tail landing gear jacked (axle jack)
1-7-2	Helicopter safed

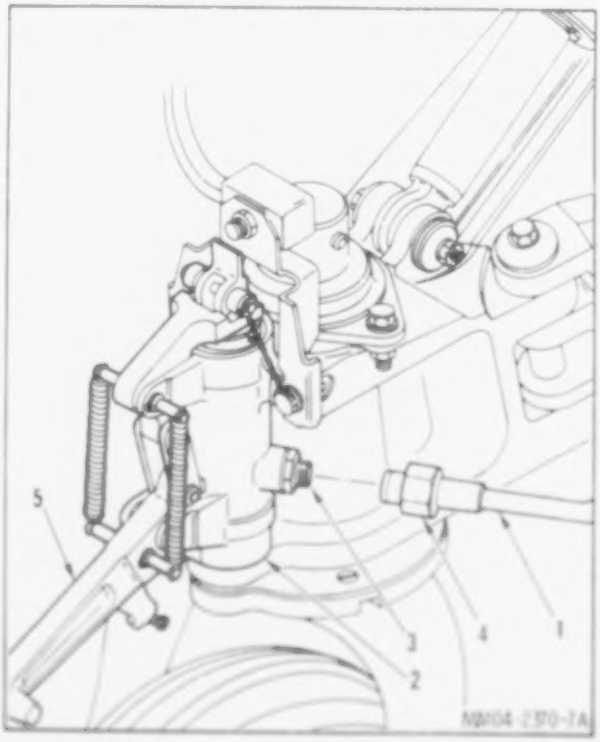
A. REMOVAL

1. **Disconnect hydraulic line (1) from lock actuator (2).**

   a. Hold union (3). Remove tube nut (4). Use utility pail to catch hydraulic fluid.

   b. Move handle (5) up and down several times to expel hydraulic fluid from actuator (2). Use pail to catch hydraulic fluid. Discard drained fluid.

   c. Leave handle (5) in locked position.



GO TO NEXT PAGE

3-3-4. TAIL LANDING GEAR LOCK ACTUATOR TARGET REPLACEMENT (cont) 3-3-4

2. **Remove proximity switch bracket (6) and lock actuator (2) from tail landing gear (7).**

   a. Remove lockwire from two bolts (8).

   b. Remove two bolts (8) and washers (9).

   c. Remove bracket (6).

   d. Lay bracket (6) on trailing arm (10).

   e. Lift actuator (2) from socket (23).

3. **Remove target (11) from lock actuator (2).**

   a. Be sure handle (5) is up.

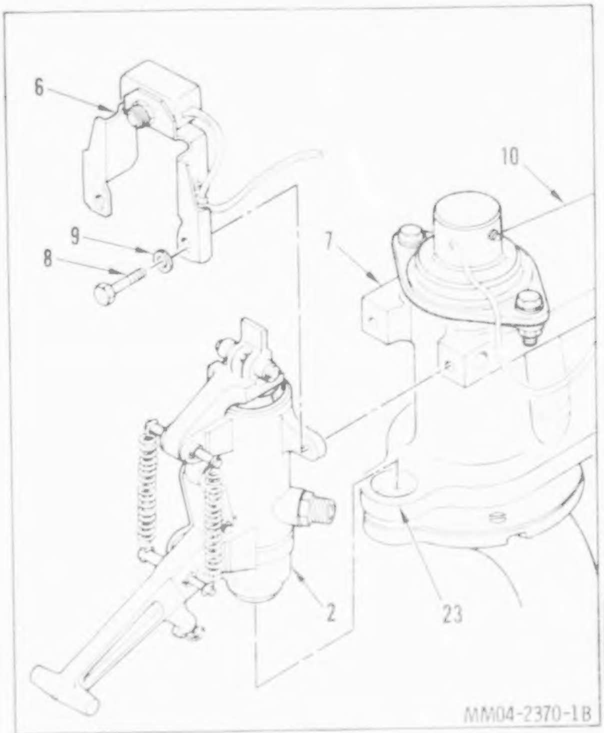
   b. Remove two springs (12) from pins (13) and (14).

   c. Remove two retaining rings (15), washers (16), rollers (17), and pin (18) from target (11).

   d. Remove two retaining rings (19), two washers (20), and pin (13) from actuator (2).

   e. Swing lever (21) away from target (11).

   f. Remove target (11) from actuator (2). Use strap wrench.

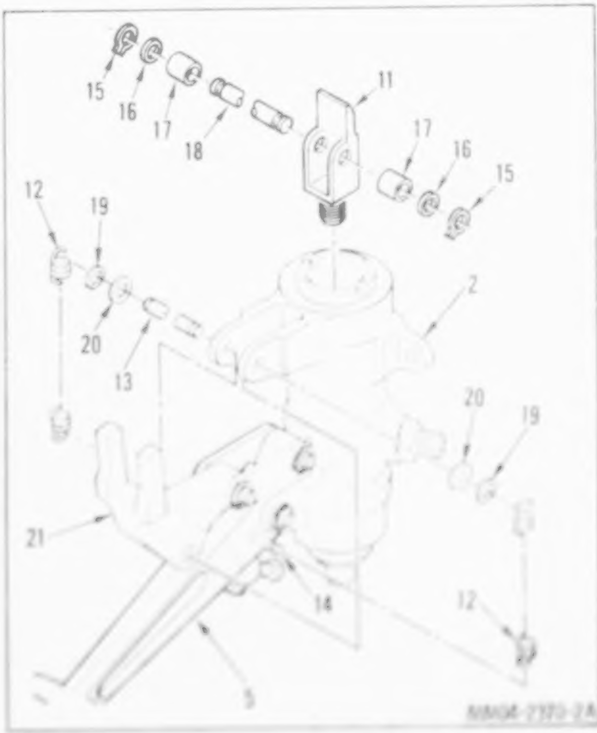


B. CLEANING

Clean actuator, arm, and lock actuator attach points (para 1-5-36).

C. INSPECTION

Check actuator and actuator attach points (para 3-3-1).



GO TO NEXT PAGE

3-3-4. TAIL LANDING GEAR LOCK ACTUATOR TARGET REPLACEMENT (cont) 3-3-4

D. INSTALLATION

1. **Install target (11) in lock actuator (2).** Torque target (11) to **20 INCH-POUNDS.**

   a. Lubricate threads on target (11). Use solid film lubricant (E79).

   b. Install target (11) in actuator (2). Use strap wrench and 3/4 crowfoot.

   c. Torque target (11) to **20 INCH-POUNDS.**

   d. Swing lever (21) up to target (11).

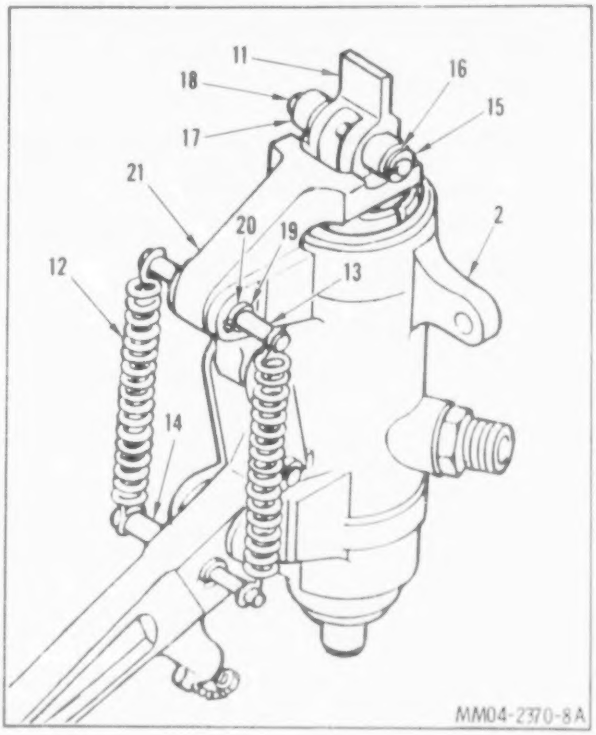
   e. Slide pin (13) through actuator (2) and lever (21).

   f. Install two washers (20) and rings (19) on pin (13).

   g. Slide pin (18) into target (11).

   h. Install two rollers (17), washers (16), and retaining rings (15) on pin (18).

   i. Install two springs (12) on pins (13) and (14).



GO TO NEXT PAGE

3-3-4. TAIL LANDING GEAR LOCK ACTUATOR TARGET REPLACEMENT (cont) 3-3-4

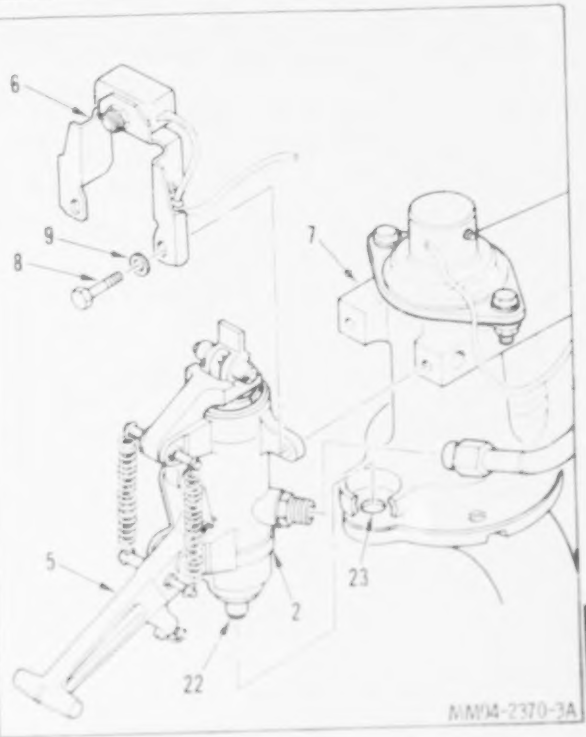
2. Install lock actuator (2) and bracket (6) on tail landing gear (7).

   a. Position actuator (2) and bracket (6) on tail landing gear (7).

   b. Install two washers (9) and bolts (8). Do not tighten bolts (8).

   c. Be sure fuse pin (22) is centered in socket (23).

   d. Be sure handle (5) is up.



3. Adjust vertical alinement of proximity switch sensor (24) to target (11). Torque two bolts (8) to 30 INCH-POUNDS.

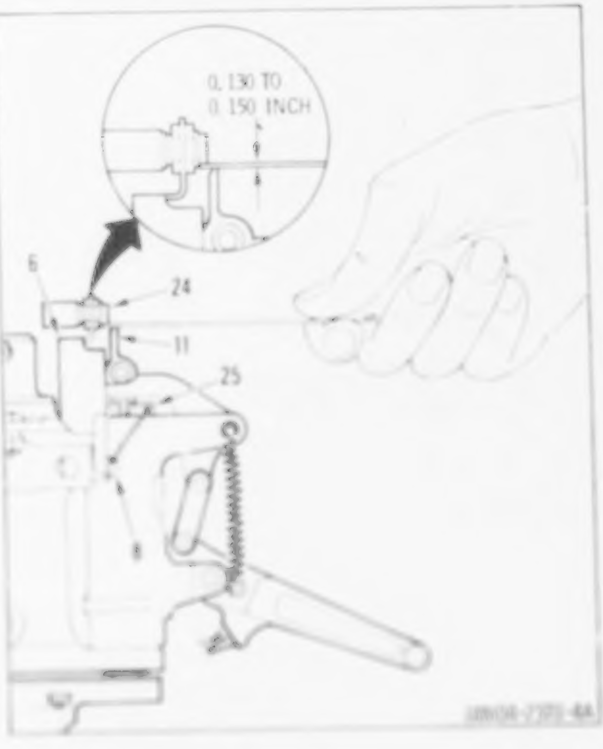
   a. Adjust bracket (6) up or down to obtain a gap of **0.130 to 0.150 INCH** between bottom of sensor (24) and top of target (11).

   b. Tighten two bolts (8).

   c. Recheck gap between sensor (24) and target (11). If needed, loosen bolts (8) and readjust gap (steps a and b).

   d. Torque two bolts (8) to **30 INCH-POUNDS**.

   e. Lockwire two bolts (8) to packing nut (25). Use lockwire (E8).



GO TO NEXT PAGE

3-3-4. TAIL LANDING GEAR LOCK ACTUATOR TARGET REPLACEMENT (cont) 3-3-4

4. **Adjust gap between proximity switch sensor (24) face and target (11).**
    a. Move handle (5) down.

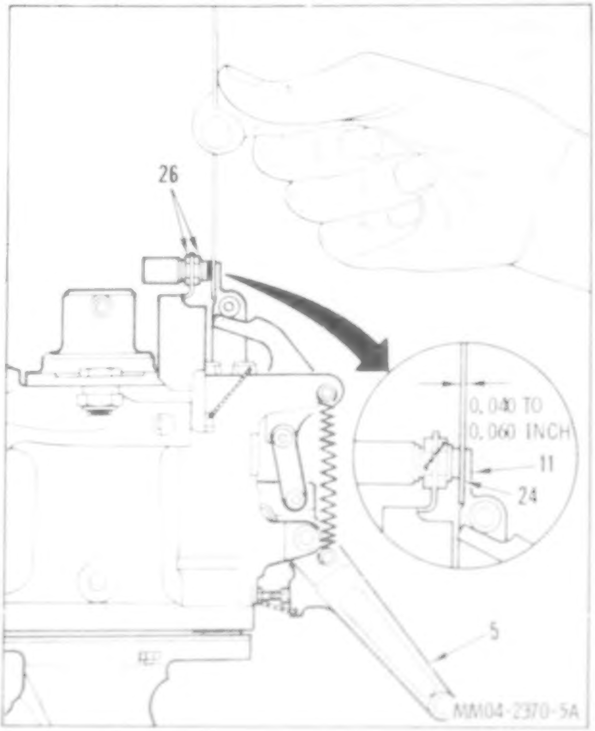
    b. Loosen two nuts (26).

    c. Adjust two nuts (26) to obtain **0.040 TO 0.060 INCH** gap.

    d. Tighten two nuts (26).

    e. Recheck gap between sensor face (24) and target (11). If needed, readjust gap (steps b, c, and d).

    f. Lockwire two nuts (26) to each other. Use lockwire (E3).



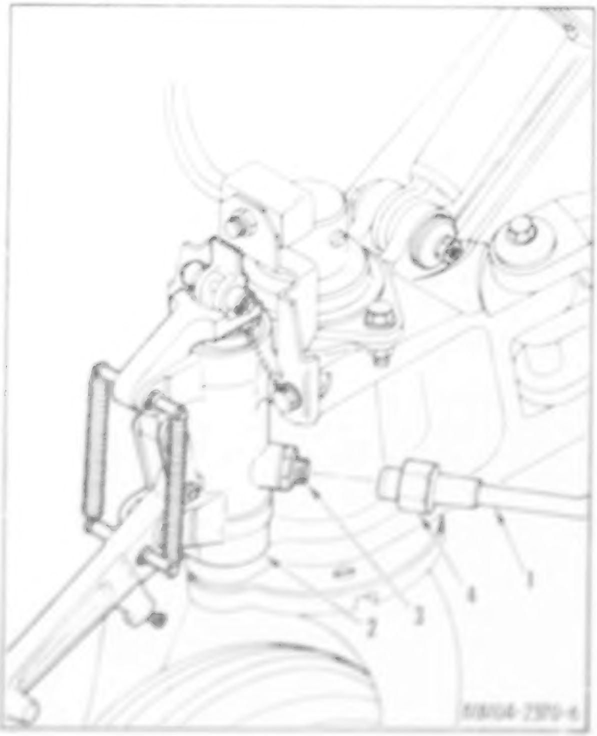
5. **Connect line (1) to lock actuator (2).**
    a. Attach tube nut (4) to union (3).

    b. Hold union (3). Tighten nut (4).

    c. Bleed all air from hydrulic line (para 1-5-24).

6. **Inspect (TI).**

7. **Remove axle jack from tail landing gear (para 1-7-14).**



END OF TASK

3-3-5. TAIL LANDING GEAR LOCK ACTUATOR FUSE PIN REPLACEMENT 3-3-5

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

	Bolt (for removal) 1/4-28 x 3-inch
(E19)	Primer

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

Remove fuse pin (1) from lock actuator (2).

a. Remove screw (3) from pin (1).

b. Temporarily install 1/4-28 x 3-inch bolt (4) into pin (1).

c. Remove fuse pin (1) from actuator (2). Use bolt (4)

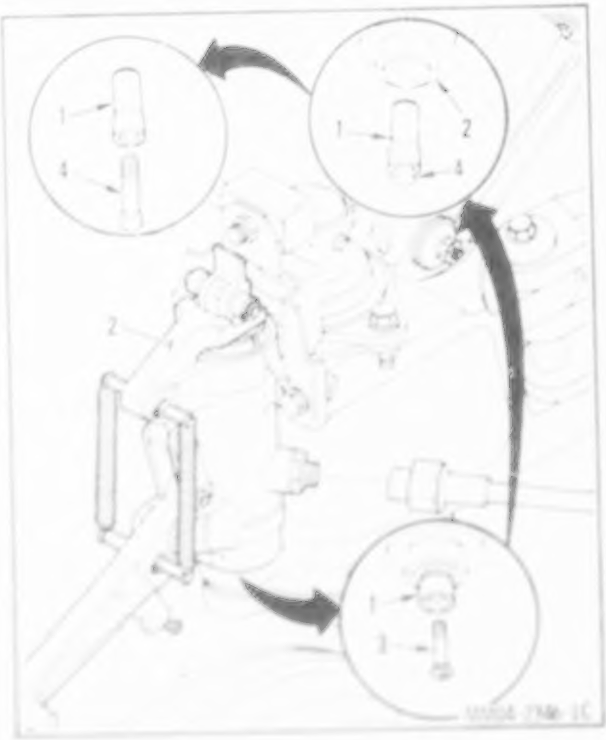
d. Remove bolt (4) from pin (1).

B. CLEANING

Clean lock actuator (para 1-5-36).

C. INSPECTION

Check lock actuator, arm and socket (para 3-3-1) and attaching hardware.



GO TO NEXT PAGE

3-3-5. TAIL LANDING GEAR LOCK ACTUATOR FUSE PIN REPLACEMENT (cont) 3-3-5

D. INSTALLATION

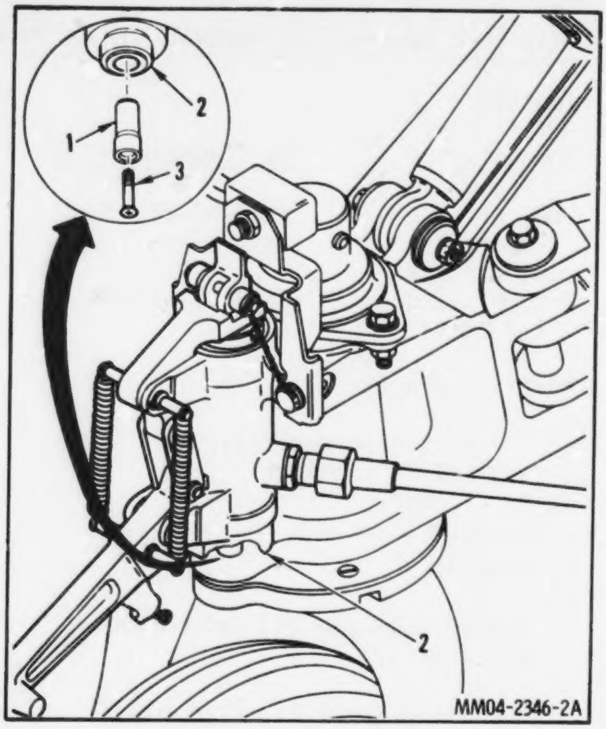
1. **Install pin (1) in lock actuator (2). Torque screw (3) to 30 INCH-POUNDS.**

   a. Coat pin (1). Use primer (E19).

   b. Install pin (1) while primer (E19) is still wet.

   c. Install screw (3). Torque screw (3) to 30 INCH-POUNDS.

2. **Inspect (TI).**



END OF TASK

3-3-6. TAIL LANDING GEAR LOCK ACTUATOR REMOVAL/INSTALLATION 3-3-6

This task covers: A. REMOVAL B. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 3/8 Drive	5120-00-288-8865

Materials/Parts:

(E8) Lockwire

Personnel Required:

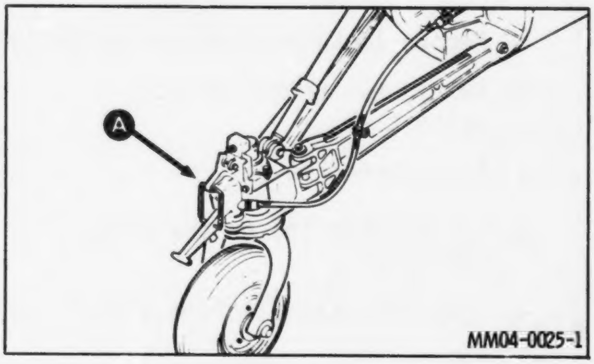
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-14	Tail landing gear jacked (axle jack)

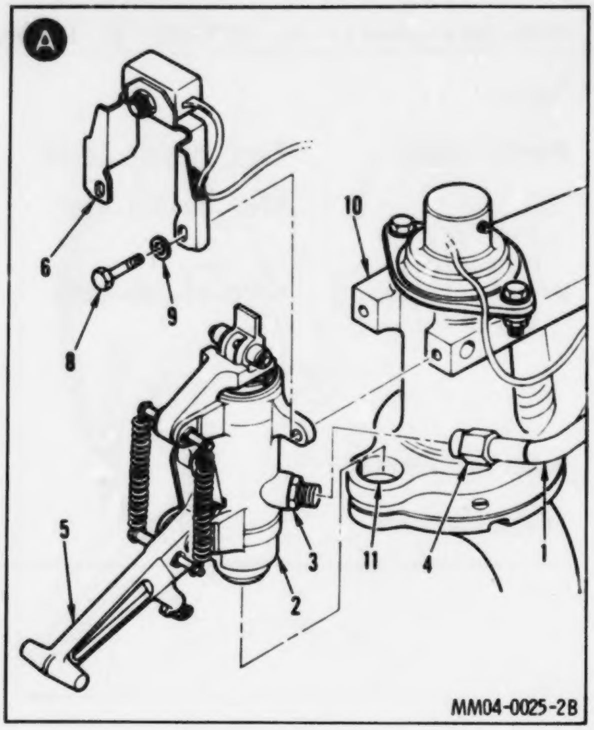


GO TO NEXT PAGE

3-3-6. TAIL LANDING GEAR LOCK ACTUATOR REMOVAL/INSTALLATION (cont) 3-3-6

A. REMOVAL

1. **Disconnect hydraulic line (1) from lock actuator (2).**
   a. Hold union (3). Remove nut (4). Use utility pail to catch hydraulic fluid spills. Discard fluid.
   b. To expel hydraulic fluid from actuator (2), move handle (5) up and down several times. Use pail to catch fluid. Discard fluid.
   c. Leave handle (5) up.
2. **Remove lock actuator (2) and proximity switch bracket (6) from tail landing gear (7).**
   a. Remove lockwire from two bolts (8).
   b. Remove two bolts (8) and washers (9).
   c. Remove bracket (6).
   d. Lay bracket (6) on trailing arm (10).
   e. Lift actuator (2) from socket (11).

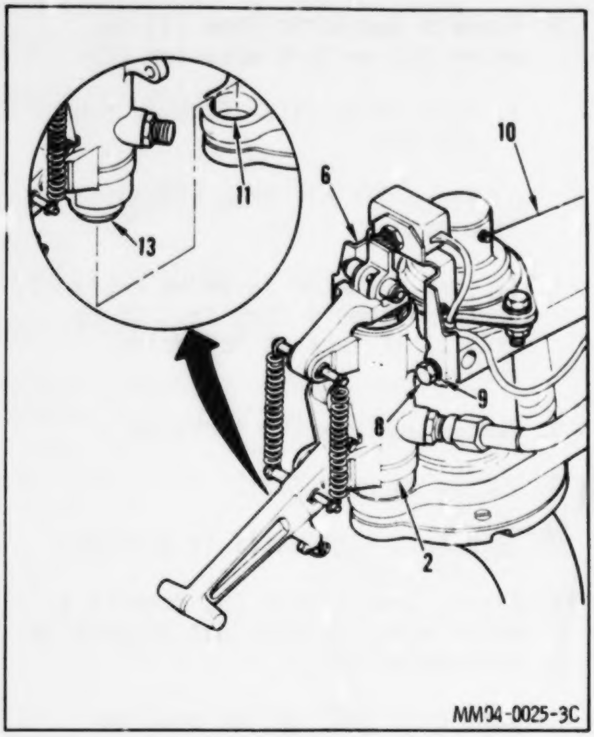


GO TO NEXT PAGE

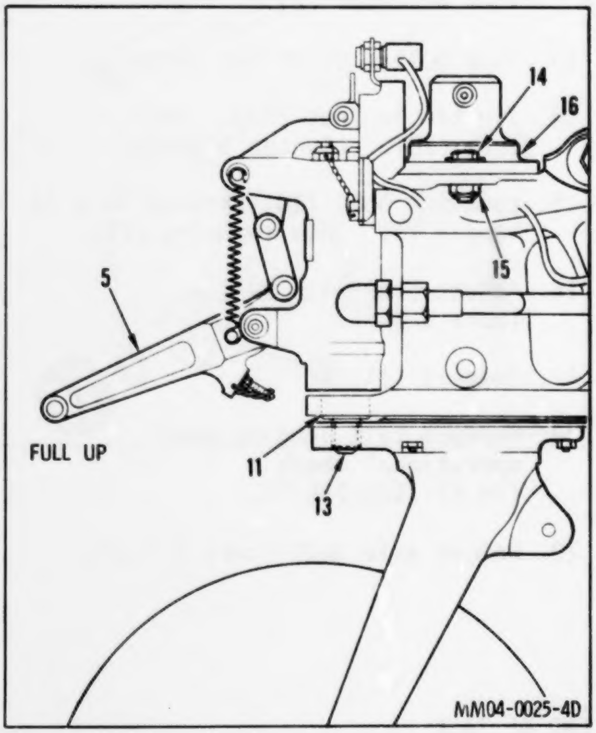
3-3-6. TAIL LANDING GEAR LOCK ACTUATOR REMOVAL/INSTALLATION (cont) 3-3-6

B. INSTALLATION

1. **Install lock actuator (2) and bracket (6) on tail landing gear (12). Torque two bolts (8) to 30 INCH-POUNDS.**
   a. Place two washers (9) on bolts (8).
   b. Place two bolts (8) through bracket (6) and actuator (2) mounting holes.
   c. Place actuator (2) and bracket (6) on socket (11) with lock pin (13) centered in socket (11) on trailing arm (10).
   d. Install bolts (8) in mounting holes on arm (10). Torque two bolts (8) to **30 INCH-POUNDS.**
   e. Lockwire two bolts (8). Use lockwire (E8).



2. **Check free movement of lock pin (13).**
   a. Move handle (5) up and down.
   b. Check that pin (13) does not rub or bind.
   c. If pin (13) rubs or is binding, perform steps 3 thru 5. If pin (13) does not bind, proceed to step 7.
3. **Loosen two cam housing (16) bolts (14).** Hold two bolts (14). Loosen two nuts (15).
4. **Adjust cam housing (16) to center lock pin (13) in socket (11).**
5. **Torque two nuts (15) to 150 INCH-POUNDS.**
   a. Hold two bolts (14).
   b. Torque two nuts (15) to **150 INCH-POUNDS.**



GO TO NEXT PAGE

3-3-6. TAIL LANDING GEAR LOCK ACTUATOR REMOVAL/INSTALLATION (cont) 3-3-6

6. **Connect hydraulic line (1) to union (3) on lock actuator (2).**

   a. Hold union (3). Tighten tube nut (4).

   b. Bleed all air from hydraulic line (para 1-5-24).

7. **If lock actuator is being replaced, perform steps 9 thru 16.** Go to step 17 if lock is not being replaced.

8. **Remove and discard lockwire.**

9. **Loosen locknut (17).**

10. **Turn bolt (18) until it bottoms.**

11. **Slowly move handle (5) down to a point where it will not go back up automatically.**

12. **Turn bolt (18) out to seat on lock actuator (2).**

13. **Turn bolt (18) in two turns.**

14. **Tighten locknut (17).** Hold bolt (18). Tighten locknut.

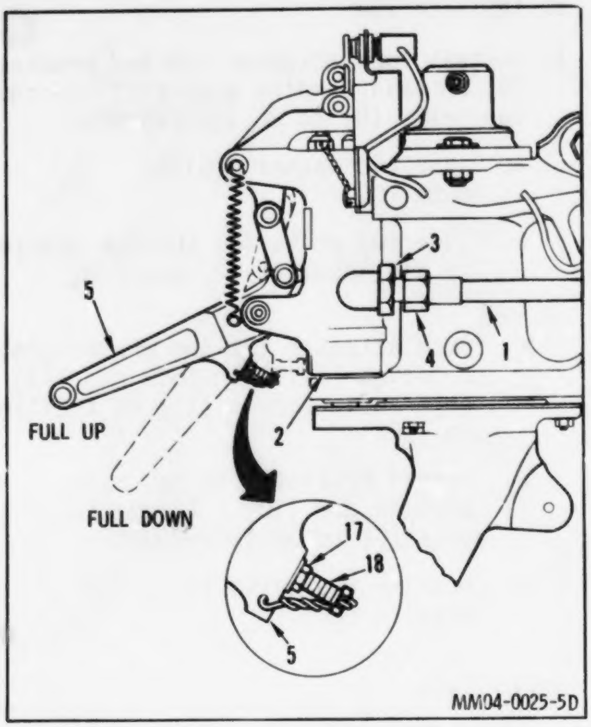
15. **Lockwire bolt (18) through hole in handle (5).** Use lockwire (E8).

16. **Adjust proximity switch** (para 3-3-4).

17. **Inspect (TI).**

18. **Perform tail landing gear operational check** (TM 55-1520-238-T).

19. **Remove axle jack** (para 1-7-14).



END OF TASK

3-3-7. TAIL LANDING GEAR LOCK ACTUATOR SPRING REPLACEMENT (AVIM) 3-3-7

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION
E. TESTING

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-542-4489
Wrench, Strap	5120-00-242-3249
Wrench, Spanner	MS8516-7

Materials/Parts:

	Packing (3)
	Scraper, Packing Nut
	Seal (2)
(E13)	Hydraulic Fluid
(E77)	Lubricant, Antiseize

Personnel Required:

67H10	Pneudraulic Repairer
66R30	Inspector/Supervisor

A. REMOVAL

1. **Disassemble lock actuator.**

   a. Remove packing nut (1) from cylinder (2). Use spanner wrench. Hold cylinder (2) with strap pipe wrench.

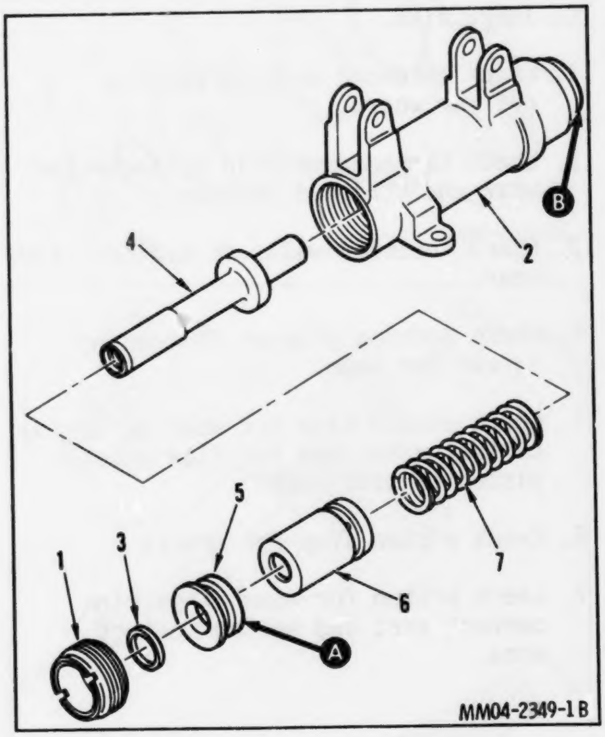
   b. Remove and discard scraper (3) from piston (4).

   c. Remove sleeve bearing (5) from cylinder (2).

   d. Remove piston stop (6) from cylinder (2).

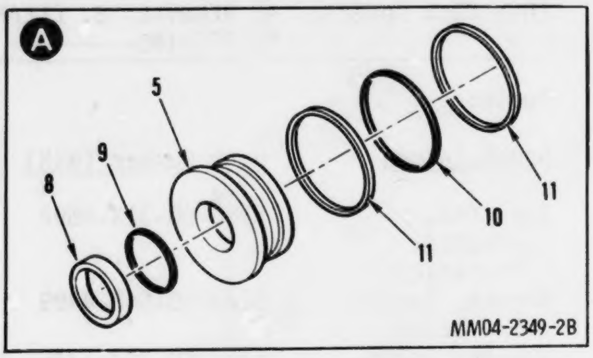
   e. Remove and discard spring (7) from cylinder (2).

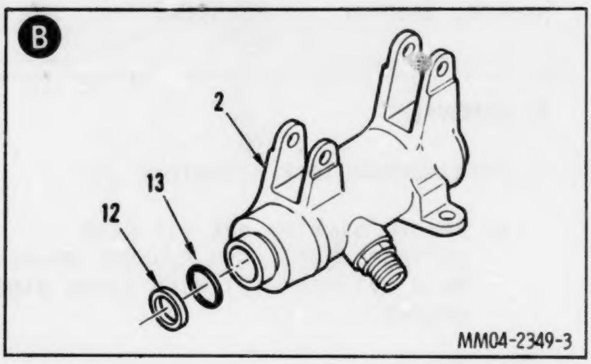
   f. Remove piston (4) from cylinder (2).



GO TO NEXT PAGE

3-3-7. TAIL LANDING GEAR LOCK ACTUATOR SPRING REPLACEMENT (AVIM) (cont) 3-3-7





2. Disassemble bearing (5).

   a. Remove and discard seal (8) and packing (9) from bearing (5).

   b. Remove packing (10) and two retainers (11) from bearing (5). Discard packing.

3. Remove and discard seal (12) and packing (13) from cylinder (2).

B. CLEANING

Clean removed parts (para 1-5-36).

C. INSPECTION

1. Check threaded area on packing nut for wear.
2. Check threaded area in cylinder for wear and stripped threads.
3. Check interior walls of cylinder for wear.
4. Check packing grooves in bearing sleeve for wear.
5. Check piston stop for wear at spring contact area, and for flaring at piston contact area.
6. Check piston stop for cracks.
7. Check piston for wear at packing contact area and spring contact area.

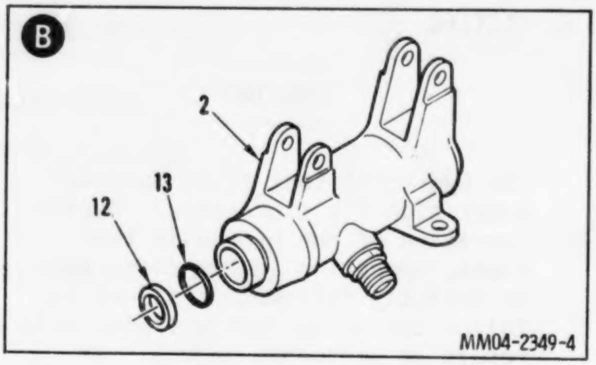
GO TO NEXT PAGE

3-3-7. TAIL LANDING GEAR LOCK ACTUATOR SPRING REPLACEMENT (AVIM) (cont) 3-3-7

D. INSTALLATION

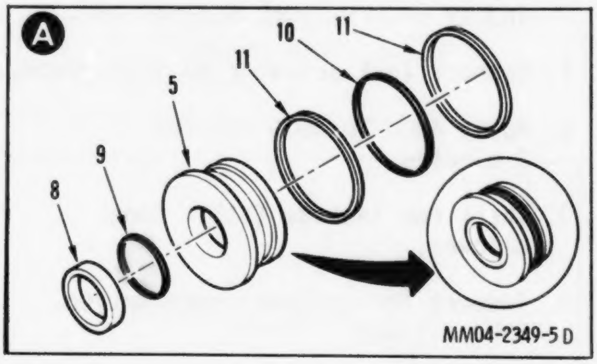
1. **Before installation, dip new scraper (3), packings (9), (10), (13), seal (12), and retainers (11) in hydraulic fluid.** Use hydraulic fluid (E13).

2. **Install new packing (13) and seal (12) in cylinder (2).**



3. **Install new seal (8) and packing (9) in bearing (5).**

4. **Install two retainers (11) and new packing (10) on bearing (5).**



5. **Assemble actuator.** Torque packing nut (1) to **70 INCH-POUNDS.**

   a. Install piston (4), spring (7), and piston stop (6) into cylinder (2).

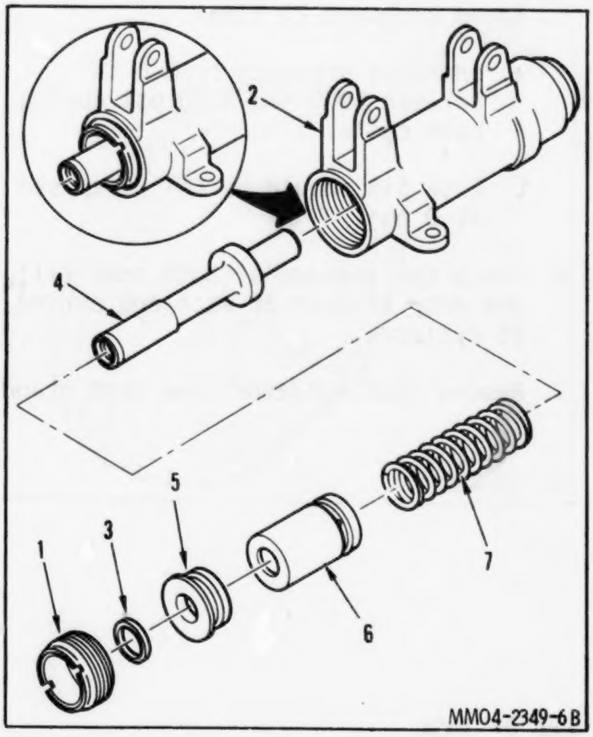
   b. Install new scraper (3) in nut (1).

   c. Lubricate threads of nut (1). Use antiseize lubricant (E77).

   d. Install bearing (5) and nut (1) into cylinder (2). Use spanner wrench and strap pipe wrench.

   e. Torque nut (1) to **70 INCH-POUNDS.**

6. **Inspect (TI).**



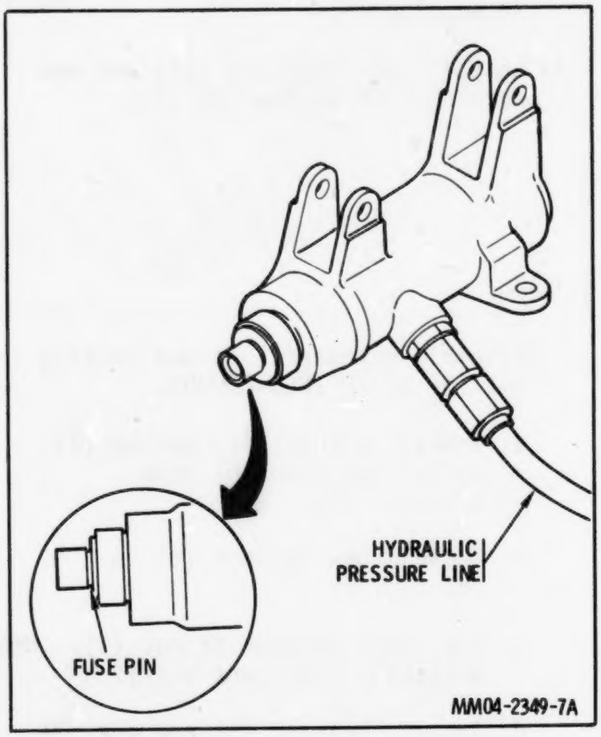
GO TO NEXT PAGE

E. TESTING

WARNING

The hydraulic test stand operates under high fluid pressure. During operation of the hydraulic test stand, operating instructions must be strictly followed. Failure to follow operating instructions could result in personnel injury. If injury occurs, seek medical aid.

1. Connect lock actuator to test stand.
2. Apply 4400 TO 4600 PSI for 3 minutes.
3. Check for leakage (TI). None allowed.
4. Inspect for cylinder deformation. None allowed.
5. Cycle pressure 25 times.
   a. Increase pressure from 0 to between 2900 and 3100 psi during each cycle.
   b. Fuse pin should be fully exposed at 0 psi.
6. Check for leakage at both ends (TI). One drop allowed at each end during 25 cycles.
7. Remove lock actuator from test stand.



END OF TASK

3-3-8. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) AND AXLE REMOVAL 3-3-8

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Spanner	5120-00-215-1882

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-2620-200-24

Equipment Conditions:

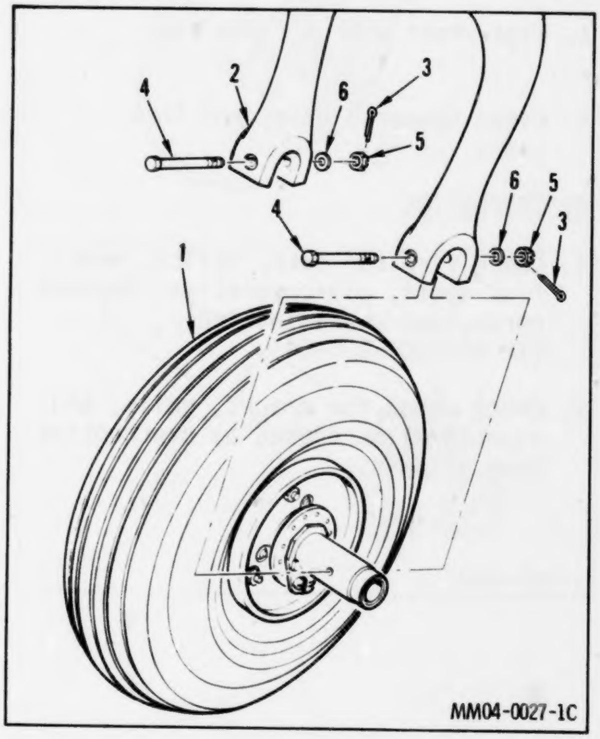
Ref	Condition
1-7-2	Helicopter safed
1-7-14	Tail landing gear jacked (axle jack)

A. REMOVAL

WARNING

Do not take wheel apart before deflating tire. Pressure on loosened nuts could cause nuts to break loose and wheel halves to separate. Flying parts could injure personnel. If injury occurs, seek medical aid.

1. **Deflate tire.**
2. **Remove wheel (1) from fork (2).**
   a. Remove and discard two cotter pins (3).
   b. Hold two bolts (4). Remove two nuts (5) and washers (6).
   c. Support wheel (1). Remove two bolts (4).
   d. Remove wheel (1) from fork (2).



GO TO NEXT PAGE

3-3-8. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) AND AXLE REMOVAL (cont) 3-3-8

3. Remove spacer (7) from axle (8).

4. Remove axle (8) from wheel (1).

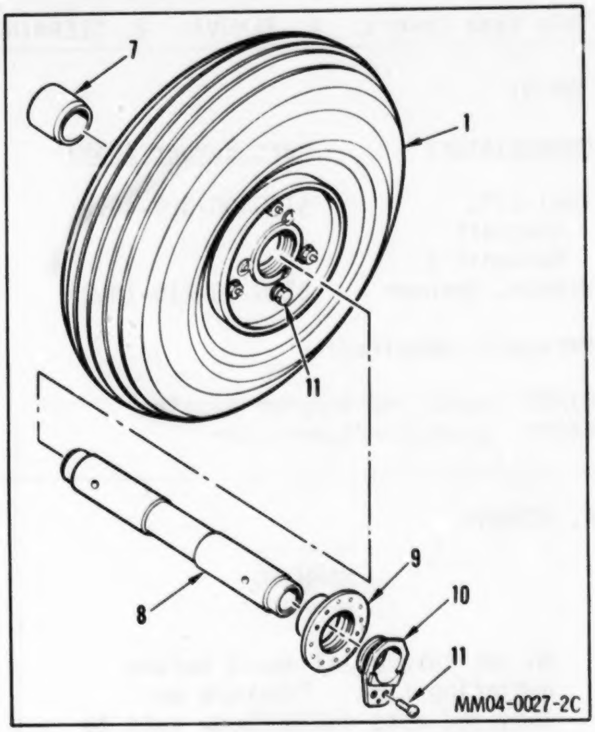
5. Remove spacer (9) and lock (10) from axle (8). Use spanner wrench.

6. Remove spacer (9) from lock (10).

   a. Remove lockwire.

   b. Remove screw (11).

   c. Turn spacer (9) counterclockwise to loosen lock (10).



B. CLEANING

1. Wipe wheel with a clean rag.

2. Clean spacers, axle, and lock (para 1-5-36).

C. INSPECTION

1. Check tire for cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination (TM 55-2620-200-24).

2. Check wheel for cracks, galls, and discoloration caused by overheating. None allowed.

END OF TASK

3-3-9. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) AND AXLE INSTALLATION 3-3-9

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Spanner	5120-00-215-1882
Inflator Assembly, Tire	4920-00-781-8423
Cart, Nitrogen	3655-00-534-0564

Materials/Parts:

	Cotter Pin (2)
(E5)	Grease
(E8)	Lockwire

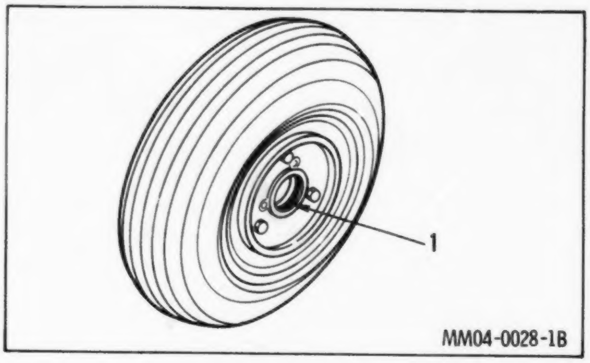
Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

1. **Inflate tire to 50 psi. Use inflator and nitrogen cart.**

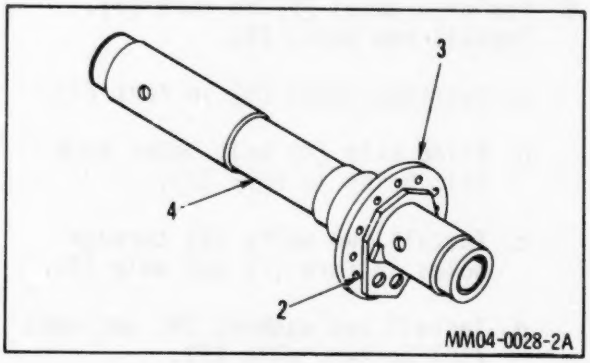
2. **Check that bearings have been greased.**

3. **Apply grease to lip of seal (1).** Use grease (E5).



4. **Install lock (2) on spacer (3).**

5. **Install assembled spacer (3) and lock (2) on axle (4).**

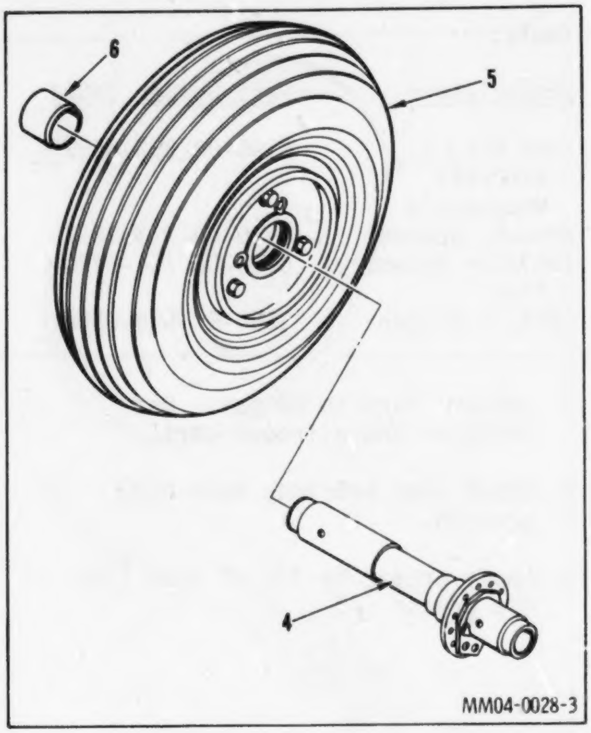


GO TO NEXT PAGE

3-3-9. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) AND AXLE INSTALLATION (cont)

6. **Slide axle (4) into wheel (5).**

7. **Slide spacer (6) on axle (4).**



8. **Position wheel (5) in fork (7). Install two bolts (8).**

   a. Position wheel (5) in fork (7).

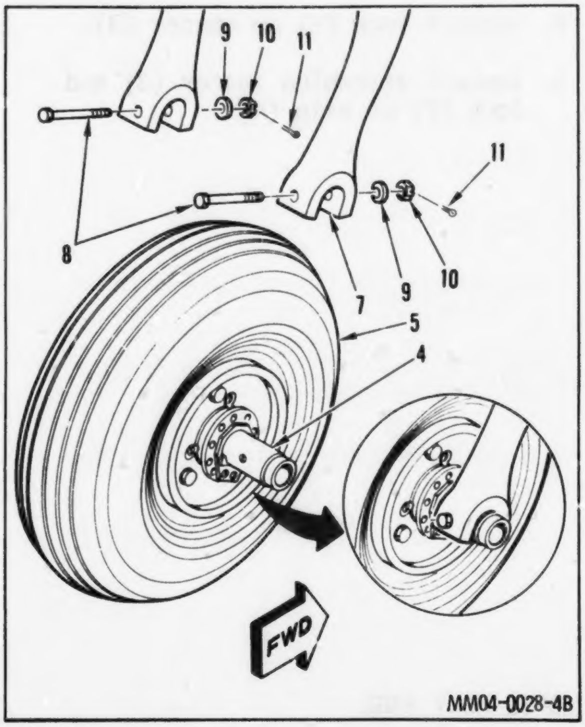
   b. Aline axle (4) bolt holes with bolt holes in fork (7).

   c. Install two bolts (8) through holes in fork (7) and axle (4).

   d. Install two washers (9) and nuts (10) on two bolts (8).

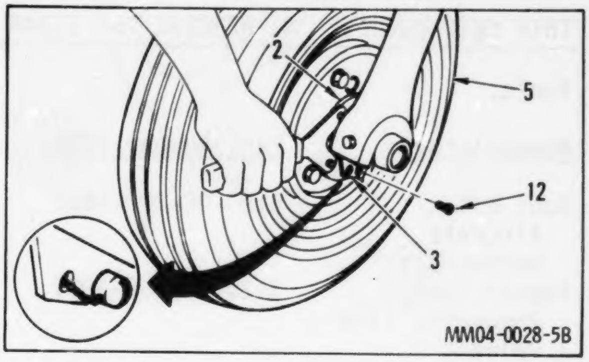
   e. Hold two bolts (8). Tighten two nuts (10).

   f. Install two new cotter pins (11) in bolts (8).



GO TO NEXT PAGE

3-3-9. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) AND AXLE INSTALLATION (cont) 3-3-9



9. **Adjust spacer (3).**

   a. Rotate wheel (5) by hand.

   CAUTION

   Do not tighten axle nut until a heavy drag is felt. Possible damage to wheel bearings may occur.

   b. Tighten spacer (3) until bearings are firmly seated and a slight drag in bearings can be felt. Use spanner wrench.

   c. Back off spacer (3) one full turn.

   d. Repeat step b.

10. **Install screw (12).**

    a. Aline holes in lock (2) with closest holes in spacer (2).

    b. Install screw (12).

    c. Lockwire screw (12) to lock (2). Use lockwire (E8).

11. **Inspect (TI).**

12. **Inflate tire to 95 psi.** Use nitrogen cart and inflator.

13. **Remove axle jack** (para 1-7-14).

END OF TASK

3-3-10. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING), TIRE, AND TUBE REMOVAL 3-3-10

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Repair Tool, Pneumatic Tire Valve	5120-00-308-3809

References:

TM 55-2620-200-24

Personnel Required:

67R10 Attack Helicopter Repairer

A. REMOVAL

WARNING

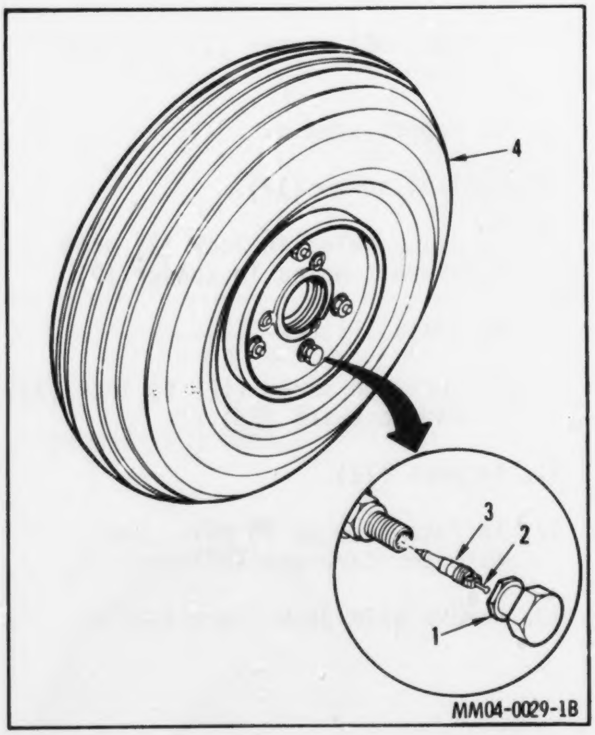
- **Do not take wheel apart before deflating tire. Pressure on loosened nuts could cause nuts to break loose and wheel halves to separate. Persons nearby could be injured by flying parts. If injury occurs, seek medical aid.**
- **Do not remove valve core from valve stem until all nitrogen is out of tire. Pressure on loosened core could cause core to be blown from stem and injure personnel. If injury occurs, seek medical aid.**

1. **Deflate tire.**

   a. Remove valve cap (1).

   b. To deflate tire (4), press end (2) of valve core (3).

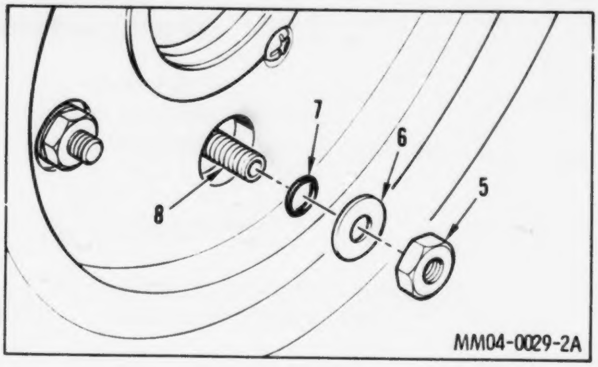
   c. Remove valve core (3). Use valve repair tool.



GO TO NEXT PAGE

3-3-10. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING), TIRE, AND TUBE REMOVAL (cont) 3-3-10

2. **Remove nut (5), washer (6), and packing (7) from valve stem (8).** Discard packing (7).



3. **Remove three wheel bolts (9).** Remove wheel halves (10) and (11) from tire (4). Remove tube (12) from tire (4).

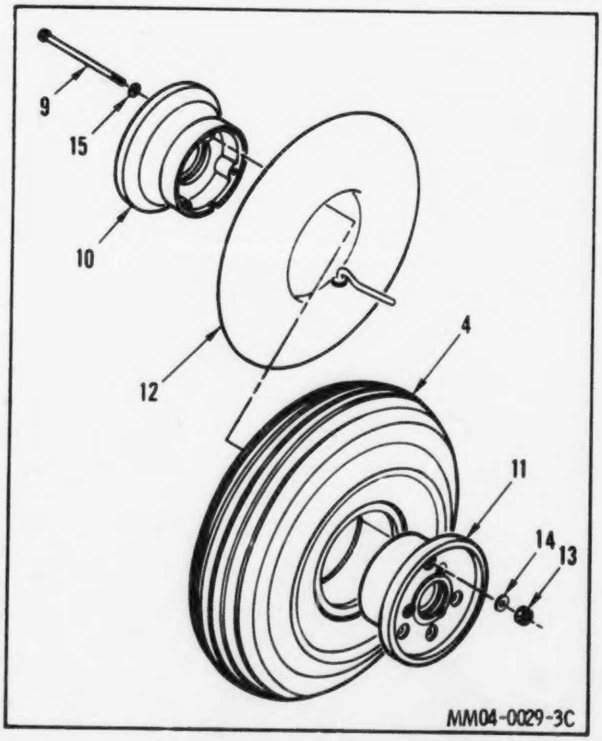
   a. Hold three bolts (9). Remove three nuts (13).

   b. Remove three washers (14).

   c. Remove three bolts (9) and washers (15) from wheel halves (10) and (11).

   d. Pull wheel halves (10) and (11) from tire (4).

   e. Remove tube (12) from tire (4).



B. **CLEANING**

Clean wheel halves (para 1-5-30).

C. **INSPECTION**

1. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination** (TM 55-2620-200-24).

2. **Check wheel halves for cracks, galls, and discoloration caused by overheating.** None allowed.

3. **Check tube for creases, cuts, holes, and punctures** (TM 55-2620-200-24).

END OF TASK

3-3-11. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING), TIRE, AND TUBE INSTALLATION 3-3-11

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Repair Tool, Pneumatic Tire Valve	5120-00-308-3809
Wrench, Torque, 1/4 Drive	5120-00-585-8434
Inflator, Tire	4920-00-781-8423
Cart, Nitrogen	3655-00-534-0564
Cage, Safety	Local Manufacture (TM 55-1500-204-25/1)

Materials/Parts:

	Packing
(E17)	Compound, Thread
(E18)	Compound, Leak-Detection

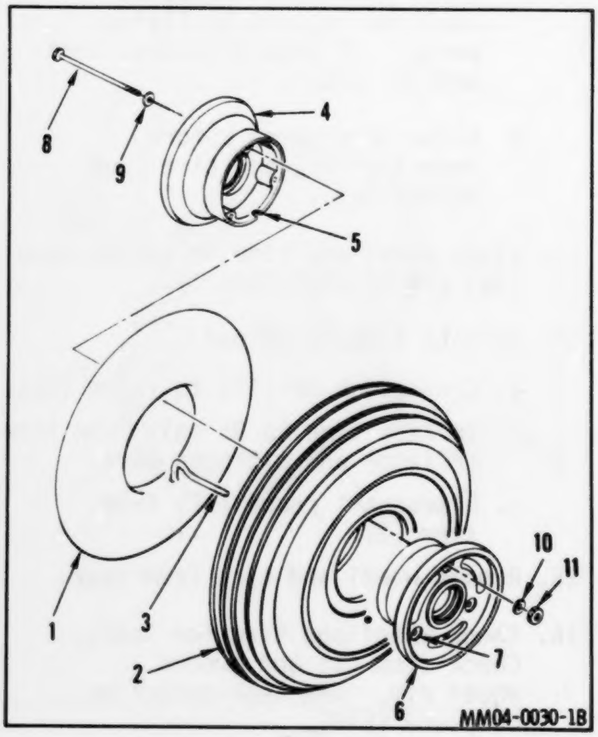
Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-1500-204-25/1
TM 55-2620-200-24

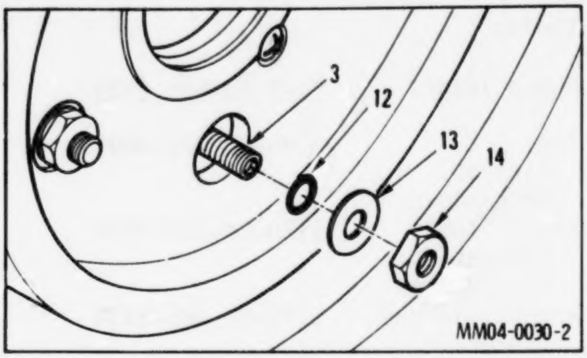
1. **Install inner tube (1) in tire (2).** Aline valve stem (3) with dot on tire (2).
2. **Install tire (2) on wheel half (4).** Aline slot (5) with stem (3).
3. **Install wheel half (6).** Aline wheel half (6), valve stem hole (7), with stem (3). Push wheel half (6) into tire (2) until wheel halves (4) and (6) touch.
4. **Install three bolts (8) through three washers (9) and wheel halves (4) and (6).**
5. **Coat threads of bolts (8) with thread compound.** Use thread compound (E17).
6. **Install three washers (10) and three nuts (11) on three bolts (8).**
7. **Hold three bolts (8).** Torque three nuts (11) to **65 INCH-POUNDS.**
8. **Inspect (TI).**



GO TO NEXT PAGE

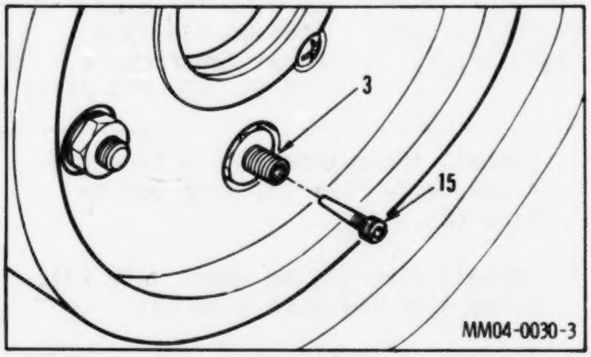
3-3-11. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING), TIRE, AND TUBE INSTALLATION (cont) 3-3-11

9. Install new packing (12) and washer (13) over stem (3).
10. Install nut (14) on stem (3).
11. Torque nut (14) to 10 INCH-POUNDS.



MM04-0030-2

12. Install valve core (15) in stem (3). Use valve repair tool.

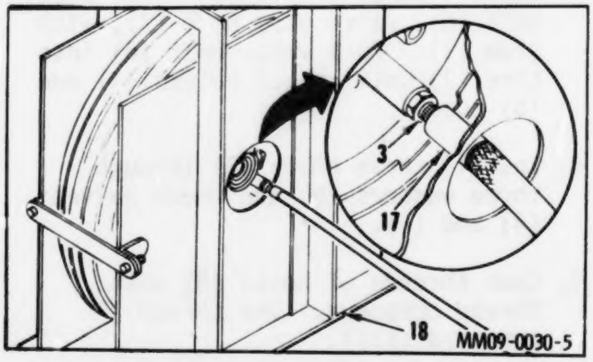


MM04-0030-3

WARNING

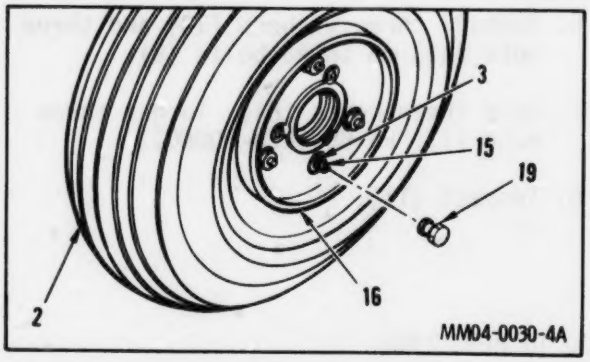
- Wheel and tire must be in safety cage when tire is being inflated. The tire could blow off wheel, or the wheel halves could separate. Personnel could be injured by flying parts. If injury occurs, seek medical aid.
- Allow 30 minutes before removing inflated tire from safety cage.

13. Place wheel and tire in safety cage (18) (TM 55-2620-200-24).
14. Inflate tire to 95 psi.
    a. Connect chuck (17) to valve (3).
    b. Inflate tire to 95 psi. Use tire inflator and nitrogen cart.
    c. Disconnect chuck (17) from stem (3).



MM09-0030-5

15. Remove wheel and tire from cage.
16. Check wheel and tire for leaks. Check stem (3) and around wheel rim. Use leak-detection compound (E18).
17. Install valve cap (19).
18. Inspect (TI).



MM04-0030-4A

END OF TASK

3-3-12. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) BEARING REMOVAL/INSTALLATION 3-3-12

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Driftpin, 1/2-inch	5120-00-239-0036

Materials/Parts:

	Seal
(E5)	Grease

Personnel Required:

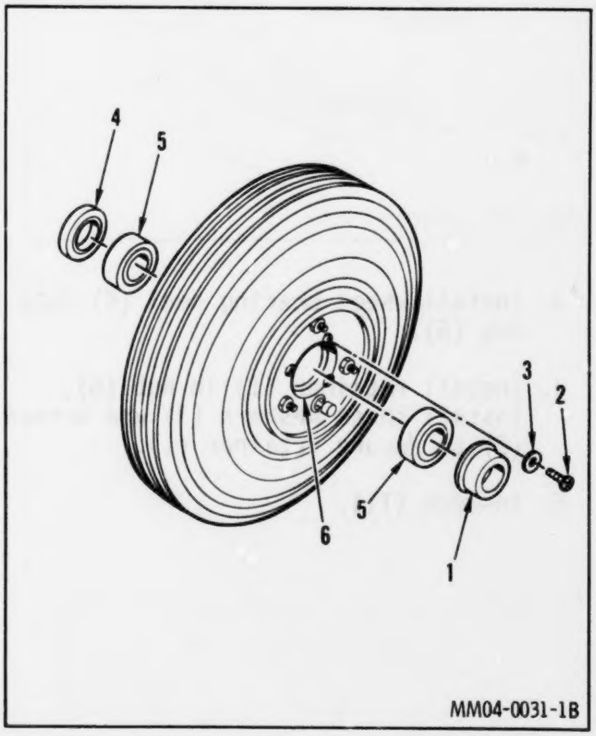
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-2620-200-24
TM 55-1500-322-24

A. REMOVAL

1. Remove bearing retainer (1). Remove three screws (2) and washers (3).
2. Remove wheel bearing seal (4) from opposite side of wheel.
3. Remove two wheel bearings (5) from hub (6). Use driftpin.



B. CLEANING

Clean wheel (para 1-5-36).

C. INSPECTION

1. Check tire for cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination (TM 55-2620-200-24).
2. Check wheel for cracks, galling, and discoloration due to overheating. None allowed.
3. Check retainer and seal for deterioration and damage. None allowed.

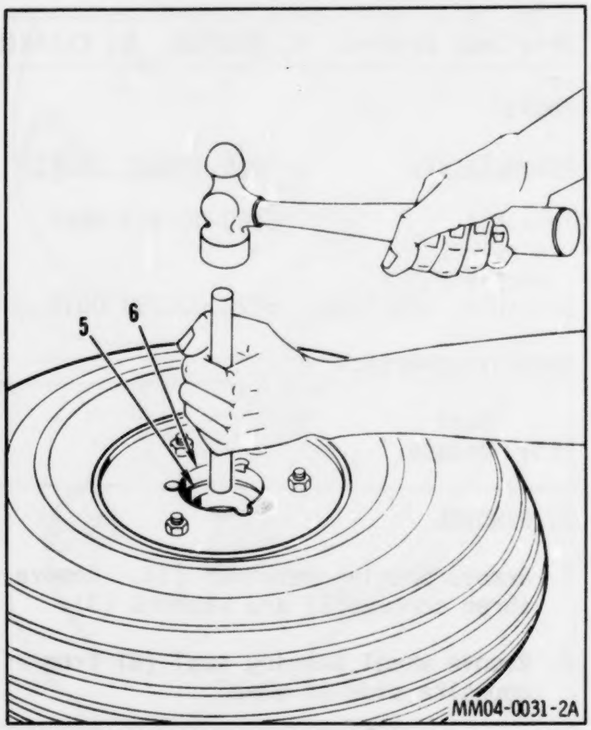
GO TO NEXT PAGE

3-3-12. TAIL LANDING GEAR WHEEL (WITH GREASE FITTING) BEARING REMOVAL/INSTALLATION (cont) 3-3-12

4. **Check wheel bearings (TM 55-1508-322-24).**

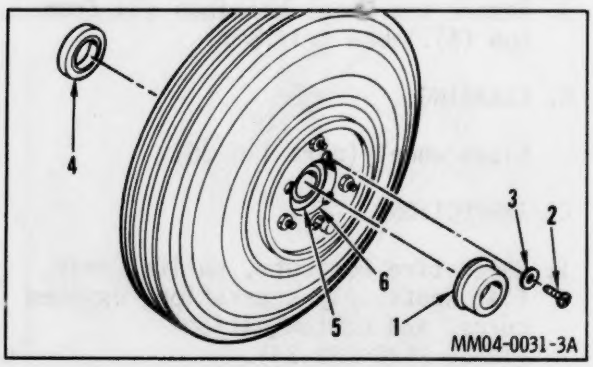
D. INSTALLATION

1. **Pack wheel bearings (5) (para 3-3-13). Use grease (E5).**
2. **Install one wheel bearing (5) in each side of hub (6). Seat bearings (5) against inner cast lip of hub (6).**



MM04-0031-2A

3. **Install wheel bearing seal (4) into hub (6).**
4. **Install retainer (1) in hub (6). Install three washers (3) and screws (2) to secure retainer (1).**
5. **Inspect (TI).**



MM04-0031-3A

END OF TASK

3-3-13. BEARING PACKING 3-3-13

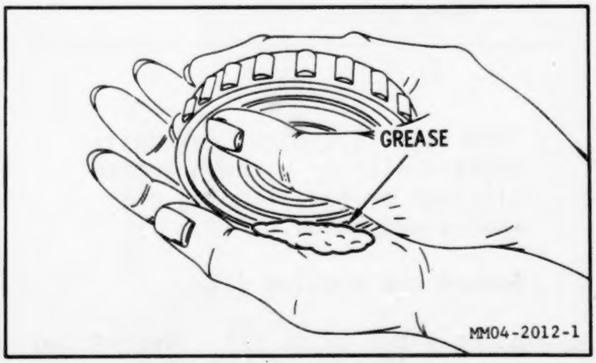
Materials/Parts:

(E1) Solvent
(E5) Grease
(E32) Cloth, Lint Free

Personnel Required:

67R10 Attack Helicopter Repairer
67R30 Inspector/Supervisor

1. **Clean bearings.**
   a. Clean bearings. Use solvent (E1) (para 1-5-36).
   b. Allow bearings to air dry.
2. **Pack bearings.**
   a. Place grease (E5) in palm of hand.
   b. Using a cupping motion, force grease into large diameter side of bearing.
   c. When grease protrudes from smaller side of bearing, turn bearing and repeat step b.
   d. Continue turning bearing until bearing is completely packed.
   e. Wipe excess grease from both sides of bearing. Use a clean lint-free cloth (E32).
3. **Inspect (TI).**



END OF TASK

3-3-14. TAIL LANDING GEAR FORK REMOVAL 3-3-14

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Pliers, Retaining Ring	5120-00-088-9393

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-15	Tail section jacked (tripod jack)
3-3-8	Tail landing gear wheel and axle removed

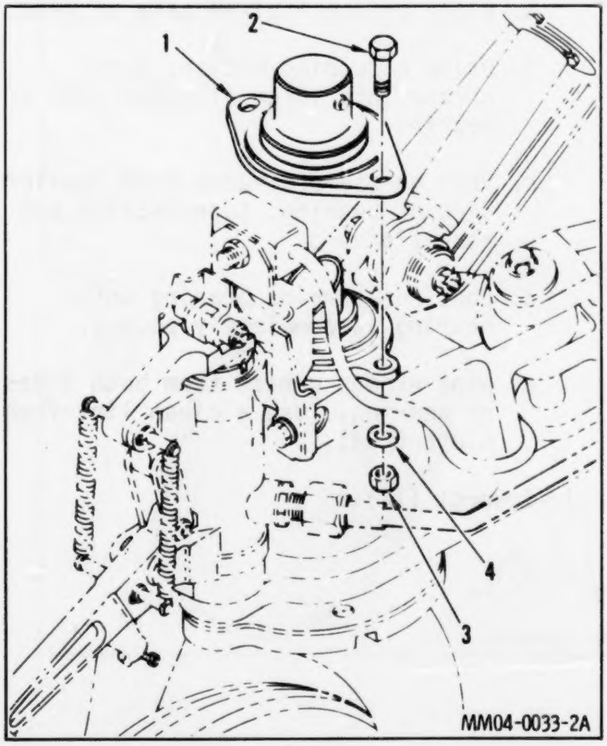
Personnel Required:

67R10 Attack Helicopter Repairer (2)
One to assist

NOTE

This task is typical for helicopters with or without grease fittings on tail landing gear wheels and axles.

1. **Remove cam housing (1).**
   a. Hold two bolts (2). Remove two nuts (3) and washers (4).
   b. Remove two bolts (2).



GO TO NEXT PAGE

3-3-14. TAIL LANDING GEAR FORK REMOVAL (cont) 3-3-14

2. Remove and discard packing (5).

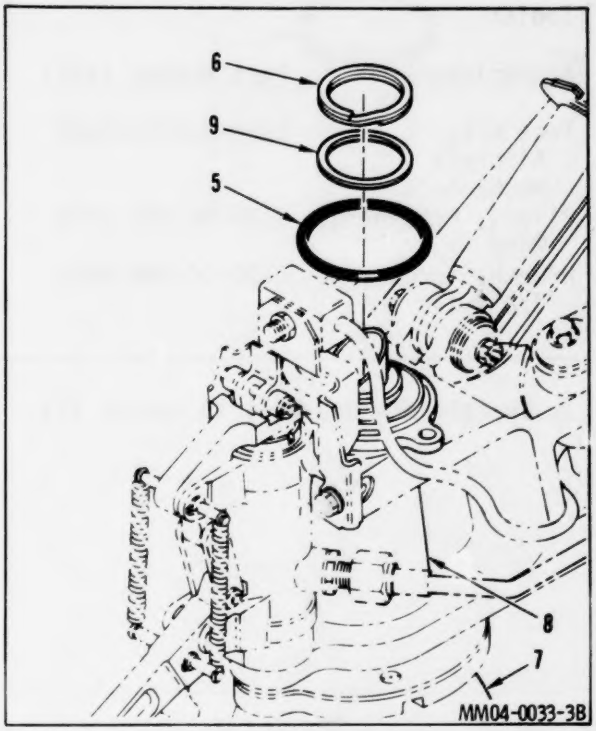
NOTE

While removing retaining ring, support fork with hand.

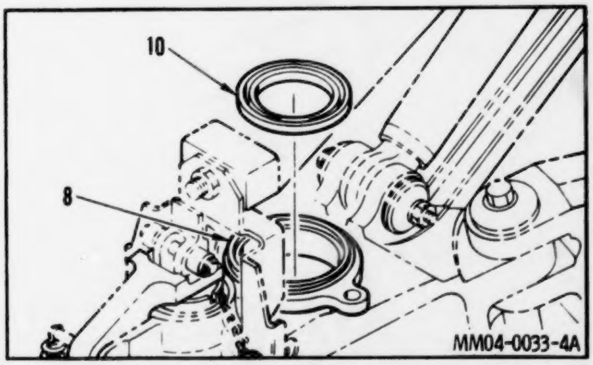
3. Remove retaining ring (6). Use retaining ring pliers.

4. Lower fork (7) from socket (8).

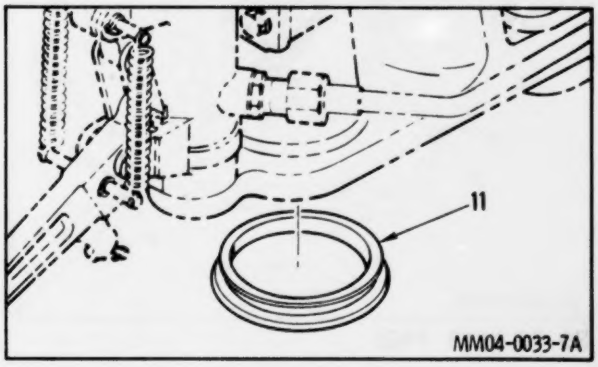
5. Remove washer (9).



6. Remove bearing (10) from socket (8).



7. Remove and discard seal (11).



END OF TASK

3-3-15. TAIL LANDING GEAR FORK INSTALLATION 3-3-15

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Pliers, Retaining Ring	5120-00-088-9393
Wrench, Torque, 3/8 Drive	5120-00-288-8865

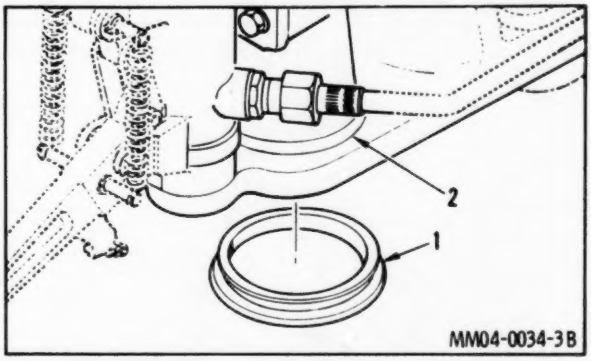
Materials/Parts:

Packing
Seal
(E9) Grease

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

1. Install new seal (1) in socket (2).



GO TO NEXT PAGE

3-3-15. TAIL LANDING GEAR FORK INSTALLATION (cont) 3-3-15

2. **Lubricate bearing (3), washer (4), and retaining ring (5).** Use grease (E9).

3. **Install fork (6) in socket (2).**

NOTE

While installing retaining ring, support fork with hand.

4. **Install bearing (3) and washer (4).**

5. **Inspect (TI).**

6. **Install retaining ring (5).** Use retaining ring pliers.

7. **Lubricate new packing (7).** Use grease (E9).

8. **Install packing (7).**

9. **Lubricate inside of cam housing (8).** Use grease (E9).

10. **Position cam housing (8) on fork (6).**

    a. Install housing (8).

    b. Install two bolts (9).

    c. Hold bolts (9). Install two washers (10) and nuts (11).

11. **Adjust cam housing (8) to center lock actuator lockpin in hole of fork.**

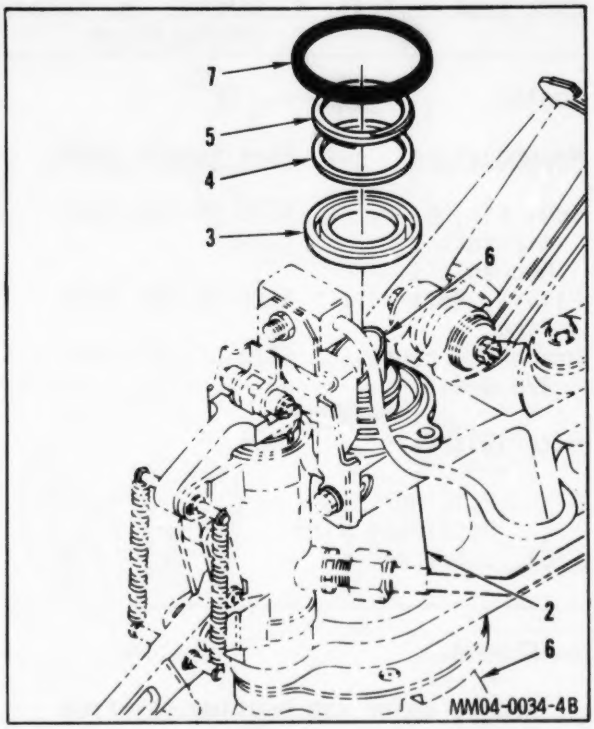
12. **Hold two bolts (9).** Torque two nuts (11) to **140 INCH-POUNDS.**

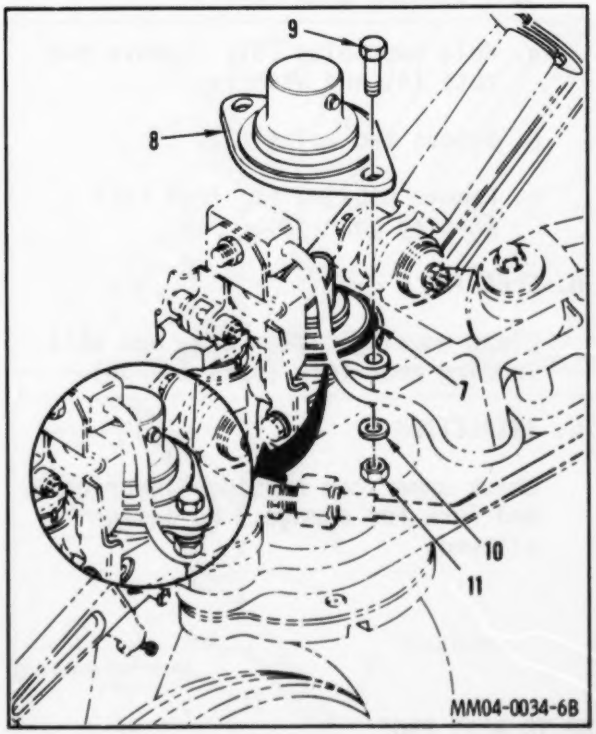
13. **Inspect (TI).**

14. **Install tail landing gear wheel and tire** (para 3-3-9 or 3-3-23 and 3-3-11 or 3-3-25).

15. **Remove tripod jack** (para 1-7-15).

END OF TASK





3-3-16. TAIL LANDING GEAR UPPER CAM HOUSING REPAIR 3-3-16

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR
E. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Pliers, Retaining Ring	5120-00-088-9393
Wrench, Torque, 3/8 Drive	5120-00-821-3441

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Materials/Parts:

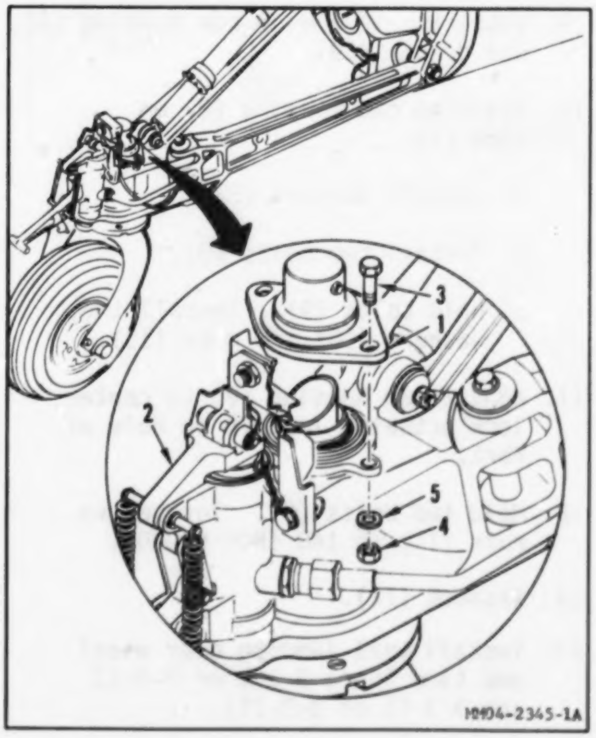
Packing
Retaining Ring
(E6) Lubricant

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

1. **Remove upper cam housing (1) from tail landing gear (2).**
   a. Hold two bolts (3). Remove two nuts (4) and washers (5).
   b. Remove two bolts (3).
   c. Remove housing (1) from tail landing gear (2).



B. CLEANING

Clean housing, lower cam, and tail landing gear fork (para 1-5-36).

C. INSPECTION

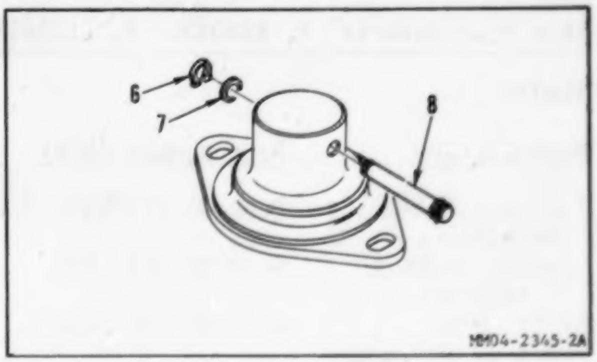
Check upper cam housing, lower cam, and fork for damage. No damage allowed.

GO TO NEXT PAGE

3-3-16. TAIL LANDING GEAR UPPER CAM HOUSING REPAIR (cont) 3-3-16

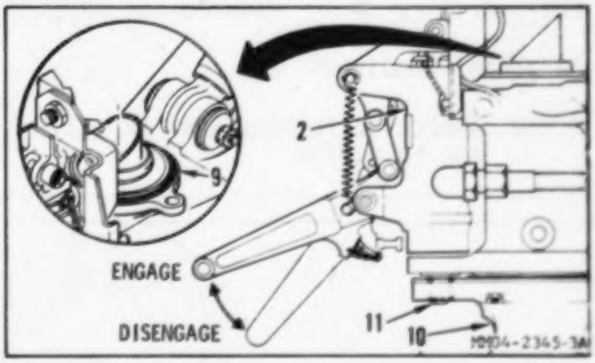
D. REPAIR

1. **Remove retaining ring (6) and one washer (7) from one end of pin (8). Discard retaining ring (6).** Use retaining ring pliers.
2. **Install new retaining ring (6) and washer (7) on pin (8).** Use retaining ring pliers.

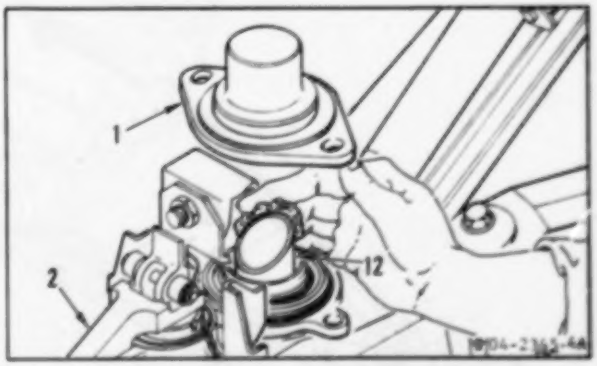


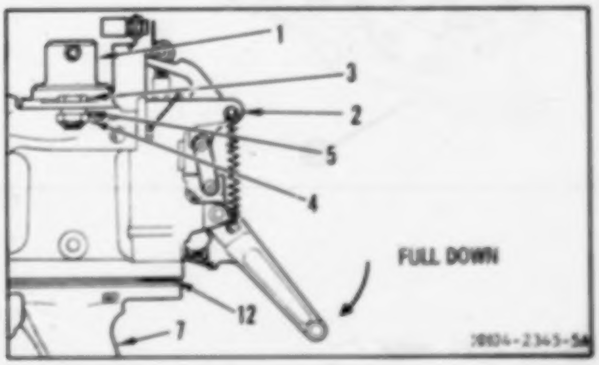
E. INSTALLATION

1. **Install new packing (9) in tail landing gear (2).**
   a. Remove and discard old packing (9).
   b. Lubricate new packing (9). Use grease (E6).
   c. Install packing (9).
2. **Position fork (10) in lock position. Manually engage tail wheel lock (11).**



3. **Install cam housing (1) on tail landing gear (2).** Torque two nuts (4) to **140 INCH-POUNDS.**
   a. Apply heavy coat of grease to cam (12). Use lubricant (E6).
   b. Place housing (1) over cam (12).
   c. Rotate housing (1) until it reaches lowest obtainable position.
   d. Install two bolts (3).
   e. Hold bolts (3). Install two washers (5) and nuts (4).
   f. Hold two bolts (3). Torque two nuts (4) to **140 INCH-POUNDS.**
   g. Disengage tail wheel lock (11).
4. **INSPECT (TI).**





END OF TASK

3-3-17. TAIL LANDING GEAR TRAILING ARMS REMOVAL 3-3-17

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

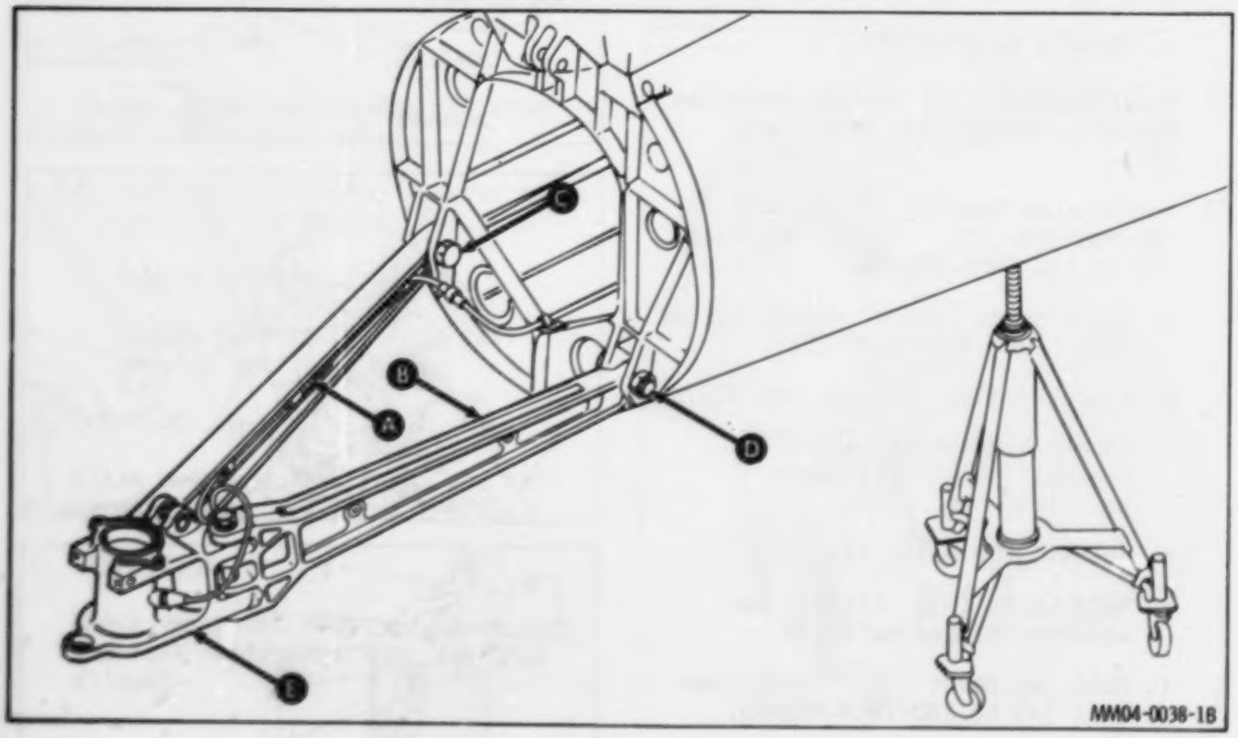
Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, 15/16 & 1-inch Box	5120-00-204-2670
Drift, Pin, 3/4 by 10 inches	5120-00-239-0036
Pail, Utility	7240-00-160-0455

Personnel Required:

67R10 Attack Helicopter Repairer (2)
One to assist

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
3-3-6	Tail landing gear lock actuator removed
3-3-14	Tail landing gear fork removed
3-3-19	Tail landing gear shock strut removed
1-7-15	Tail landing gear jacked (tripod jack)
3-3-8	Tail landing gear wheel and axle removed



GO TO NEXT PAGE

3-3-17. TAIL LANDING GEAR TRAILING ARMS REMOVAL (cont) 3-3-17

NOTE

This task is typical for left or right trailing arm, except where noted.

1. **Disconnect tail wheel lock tube (1) from hose (2).**

NOTE

Use utility pail to catch hydraulic fluid spills.

   a. Hold union (3). Remove nut (4).

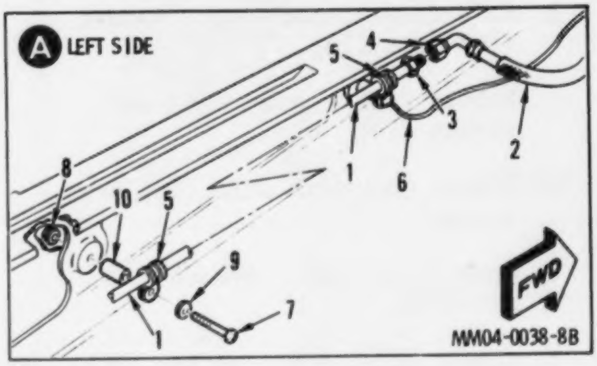
   b. Disconnect tube (1) from hose (2).

2. **Remove two clamps (5) and bonding strap (6) from tail wheel lock tube (1).**

   a. Hold two screws (7). Remove two nuts (8).

   b. Remove two screws (7), washers (9), clamps (5), and spacers (10).

   c. Remove two clamps (5) and strap (6) from tube (1).



GO TO NEXT PAGE

3. **Remove wire harness (11).**

    a. Detach connector P760 (12) from connector J760 (13).

    b. Hold four screws (14). Remove four nuts (15).

    c. Remove four washers (16) and screws (14).

    d. Remove connector J760 (13) from bracket (17).

    e. Hold screw (18). Remove nut (19).

    f. Remove screw (18), washer (20), and bracket (17).

    g. Hold screw (21). Remove nut (22).

    h. Remove screw (21), washer (23) and clamp (24).

4. **Remove trailing arm bolts (25).**

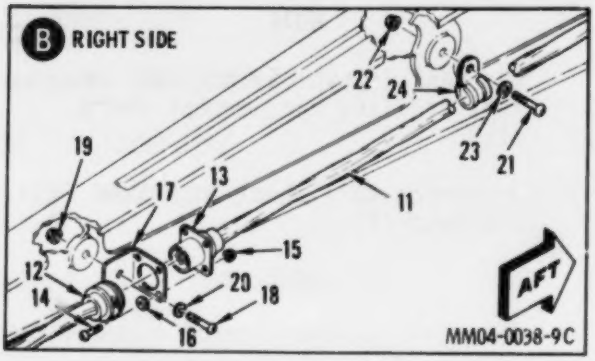
    a. Remove and discard cotter pin (26) from bolt (25).

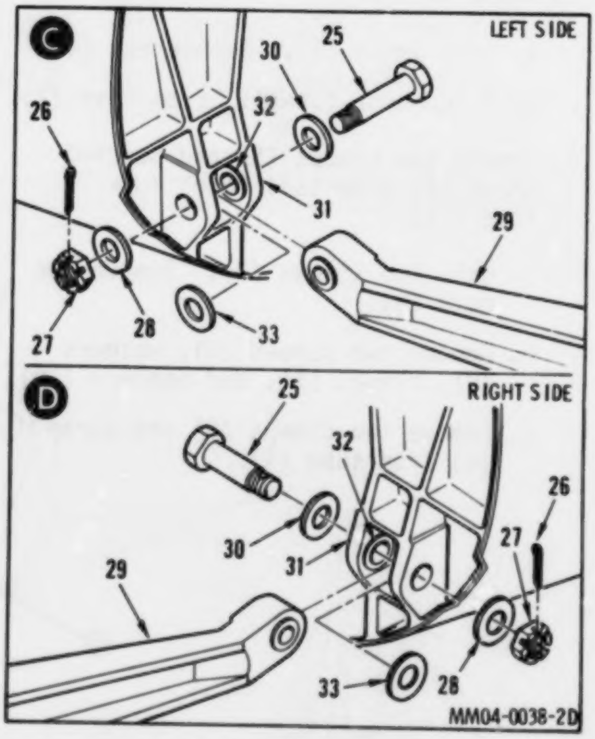
    b. Hold bolt (25).

    c. Remove nut (27) and washer (28). Use 15/16 and 1-inch box wrench.

    d. Support trailing arms (29). Remove bolt (25) and washer (30). Use 15/16 and 1-inch box wrench.

    e. Pull arm (29) away from pivot lug (31) and bearing (32). When trailing arms are removed, shim (33) will fall out.





GO TO NEXT PAGE

5. **Remove bolt (34) from arm and socket (35).**

   a. Hold bolt (34). Remove nut (36), washer (37), and pin cap (38).

   b. Remove bolt (34) and cap (39).

6. **Remove pin (40) from arm and socket (35) and arm (29).** Use drift.

7. **Remove arm (29) from arm and socket (35).**

B. CLEANING

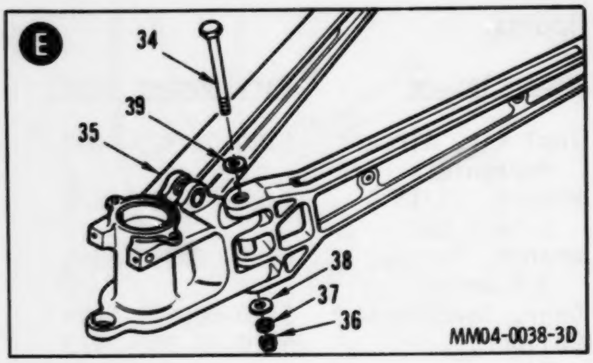
Clean arms and socket (para 1-5-36).

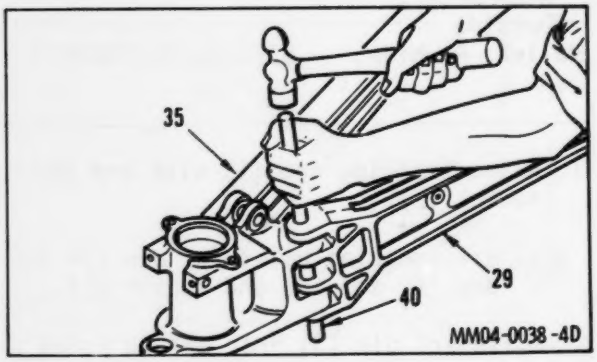
C. INSPECTION

1. **Check arms and socket for wear, elongation of bushings, bends, or cracks.** None allowed.

2. **Check arms and socket for corrosion** (para 1-5-38).

3. **Check inside diameter of bearing.** Inside diameter of bearing should not exceed **0.010 INCH.** Replace bearing if limits are exceeded.





END OF TASK

3-3-18. TAIL LANDING GEAR TRAILING ARMS INSTALLATION 3-3-18

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircaft Mechanic's	5180-00-323-4692
Wrench, 15/16 & 1-inch Box	5120-00-204-2670
Wrench, Torque, 3/8 Drive	5120-00-288-8865
Gage, Thickness	5120-00-221-1999
Caliper, Micrometer, Outside	5210-00-540-2973
Mallet, Rawhide	5120-00-222-2220

Materials/Parts:

Shim
Cotter Pin (2)

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

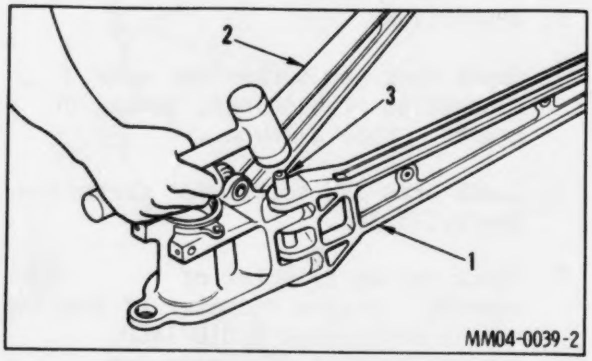
Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

1. **Aline trailing arm (1) with arm and socket (2).**

   a. Aline mating holes for pin (3) in arm (1) and arm and socket (2).

   b. Insert pin (3) into mating holes of arm (1) and arm and socket (2). Use rawhide mallet.

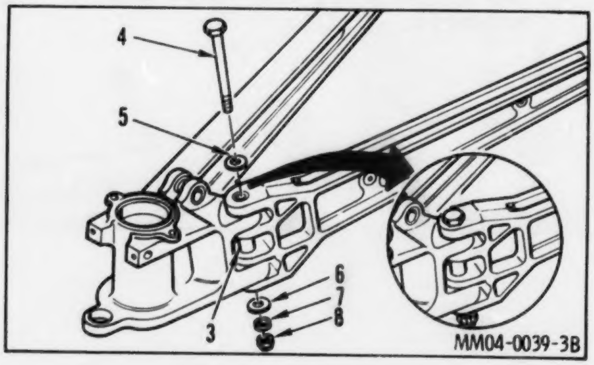


2. **Install bolt (4) and pin caps (5), and (6).** Torque nut (8) to **35 INCH-POUNDS.**

   a. Install pin cap (5) on bolt (4).

   b. Install bolt (4) through pin (3), pin cap (6), and washer (7).

3. **Install nut (8) on bolt (4).** Torque nut (8) to **35 INCH-POUNDS.**



GO TO NEXT PAGE

3-3-18. TAIL LANDING GEAR TRAILING ARMS INSTALLATION (cont) 3-3-18

4. **Position trailing arm (1) and arm and socket (2) in pivot lugs (9).**

5. **Support trailing arm (1) and arm and socket (2) until bolt (10) is installed.**

6. **Insert two shims (11) between outboard side of trailing arm (1) and arm and socket (2), and pivot lugs (9).** Remove laminates from shims (11) to maintain **0.001- to 0.004-INCH** gap between bushing (12) in trailing arm (1) and arm and socket (2) and bushing (13) in lug (9).

7. **Install bolt (14) through washer (15), lug (9), trailing arm (1), shim (11), lug (9), and washer (16).**

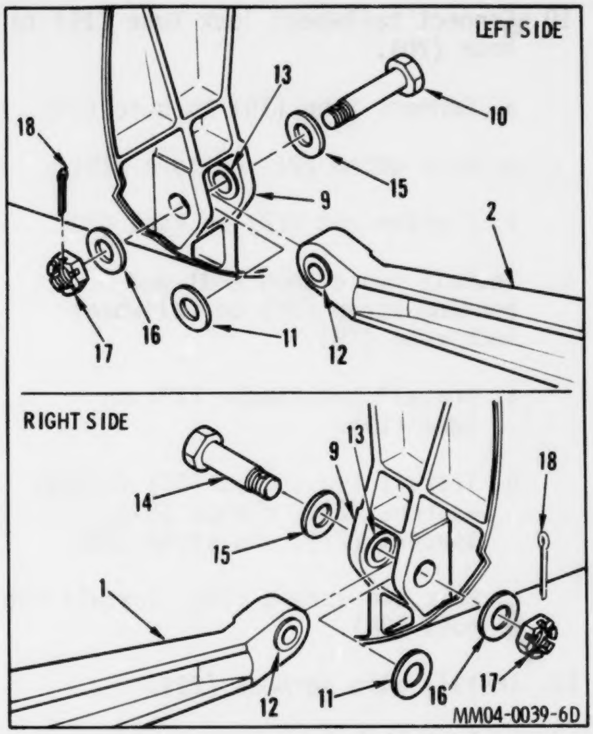
8. **Install nuts (17) on bolts (10) and (14).** Torque nuts (17) to **135 to 150 INCH-POUNDS.**

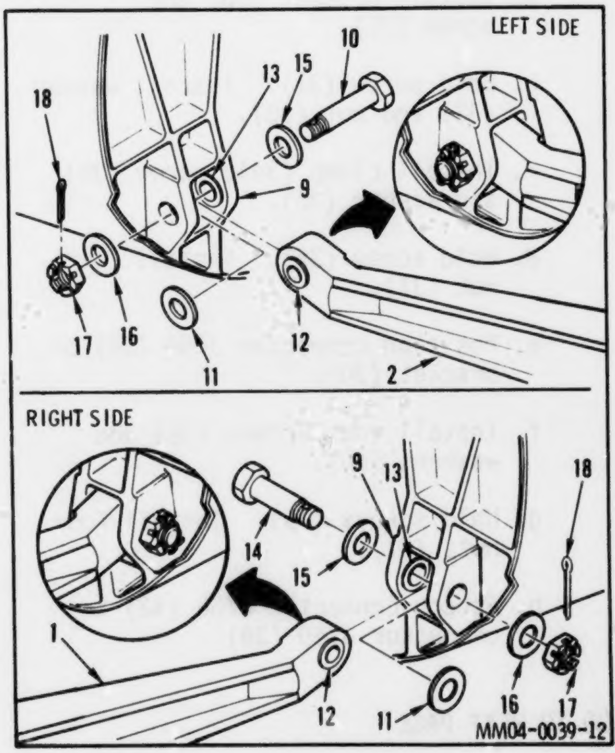
   a. Hold bolts (10) and (14).

   b. Torque nuts (17) to **135 INCH-POUNDS.**

   c. Increase torque to aline cotter pin holes, but do not exceed **150 INCH-POUNDS.**

9. **Install two new cotter pins (18) in bolts (10) and (14).**





GO TO NEXT PAGE

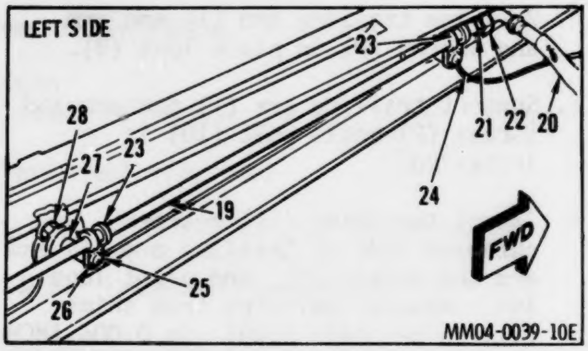
3-3-18. TAIL LANDING GEAR TRAILING ARMS INSTALLATION (cont) 3-3-18

10. Connect tailwheel lock tube (19) to hose (20).

a. Connect tube (19) to hose (20).

b. Hold union (21) on tube (19).

c. Tighten nut (22) on hose (20).



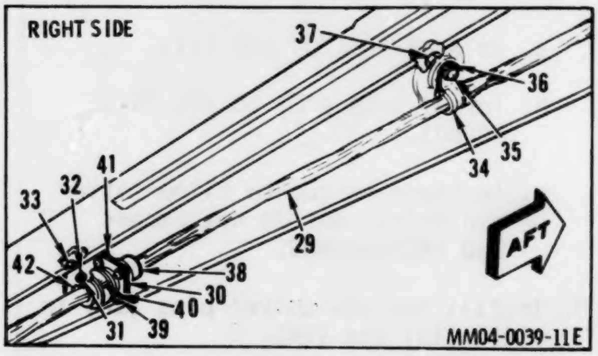
11. Install two clamps (23) and bonding strap (24) on tailwheel lock tube (19).

a. Install two clamps (23) on tube (19).

b. Install two screws (25) through washers (26), clamps (23), spacers (27), and strap (24).

c. Hold two screws (25) Install two nuts (28).

12. Install wire harness (29).



a. Install bracket (30) and screw (31).

b. Hold screw (31). Install washer (32) and nut (33).

c. Install clamp (34), screw (35) and washer (36).

d. Hold screw (35). Install nut (37).

e. Position connector J760 (38) on bracket (30).

f. Install four screws (39) and washers (40).

g. Hold screws (39). Install four nuts (41).

h. Attach connector P760 (42) to connector J760 (38).

GO TO NEXT PAGE

3-3-18. TAIL LANDING GEAR TRAILING ARMS INSTALLATION (cont) 3-3-18

13. Install shock strut (para 3-3-19).
14. Install fork (para 3-3-15).
15. Install lock actuator (para 3-3-6).
16. Install wheel and axle (para 3-3-9 or 3-3-23).
17. Remove tripod jack (para 1-7-15).
18. Inspect (TI).

END OF TASK

3-3-19. TAIL LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION 3-3-19

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4962
Wrench, 15/16 & 1-inch Box (2)	5120-00-204-2670
Wrench, Torque, 3/8 Drive	5120-00-821-3441
Driftpin, 1/2-inch	5120-00-239-0036
Jack, Hydraulic Tripod, 3-Ton	1730-00-734-9382
Mallet, Rawhide	5120-00-222-2220

Materials/Parts:

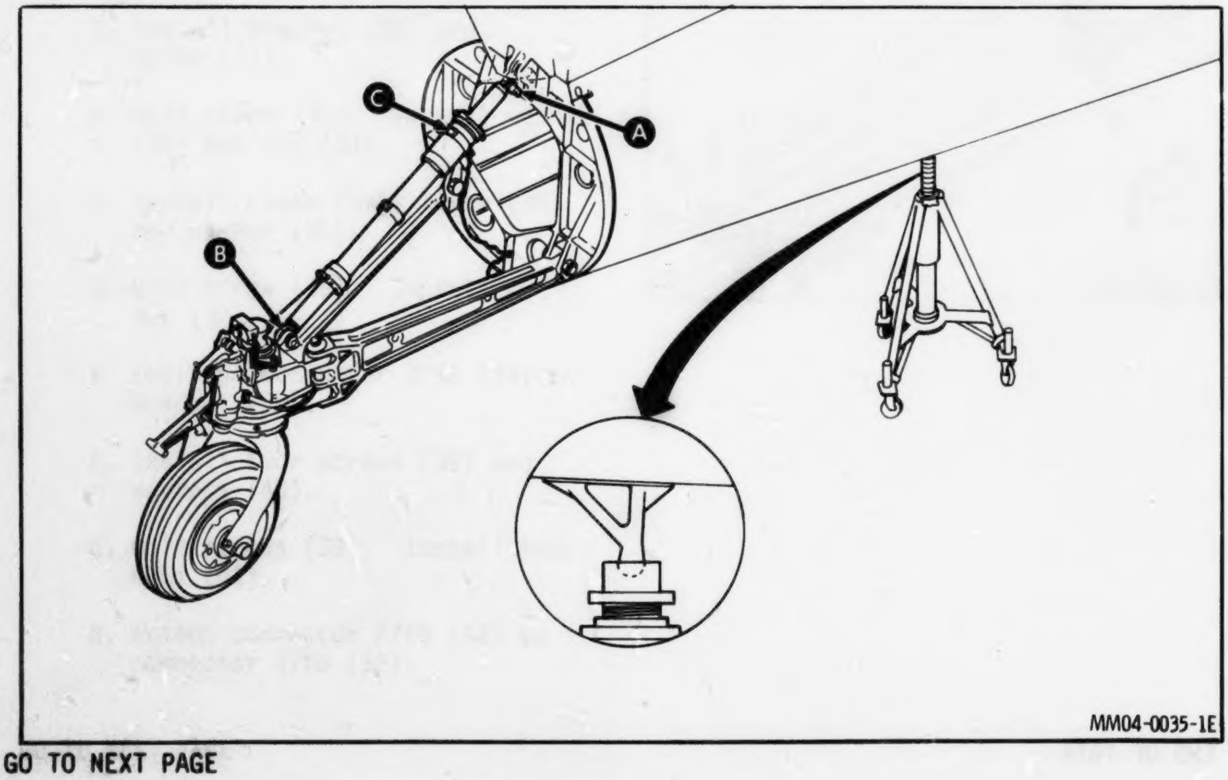
Cotter Pin (2)

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
1-7-15	Tail landing gear jacked (tripod jack)



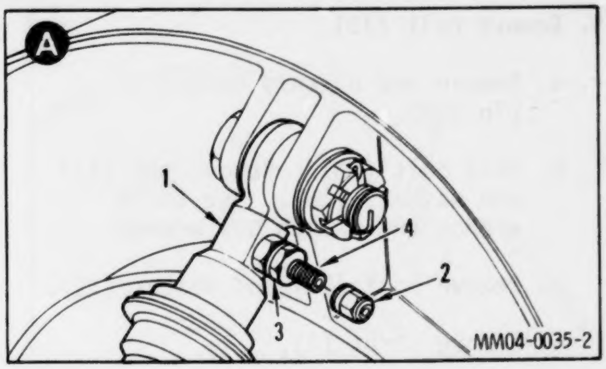
GO TO NEXT PAGE

3-3-19. TAIL LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION (cont) 3-3-19

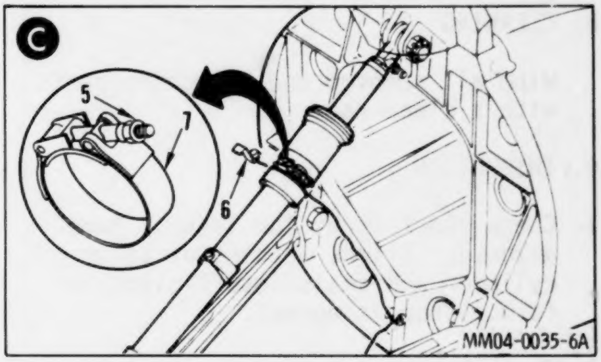
A. REMOVAL

WARNING

The shock strut contains high pressure nitrogen. Care must be taken when performing maintenance on the shock strut. Sudden release of high pressure nitrogen could cause personnel injury or damage to equipment. If injury occurs, seek medical aid.



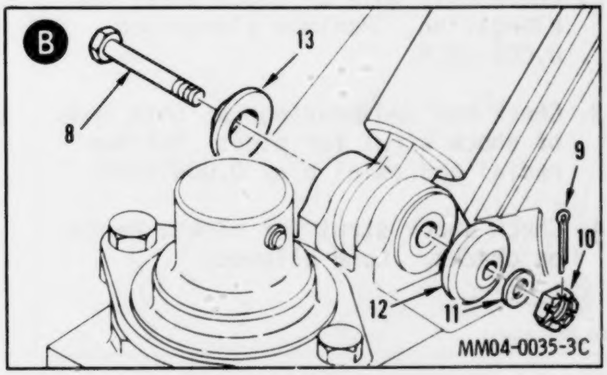
1. **Deflate shock strut (1).**
   a. Remove valve cap (2). Slowly turn nut (3) one turn counterclockwise to open valve (4).
   b. After pressure has been released, turn nut (3) one turn clockwise to close valve (4) and install cap (2).



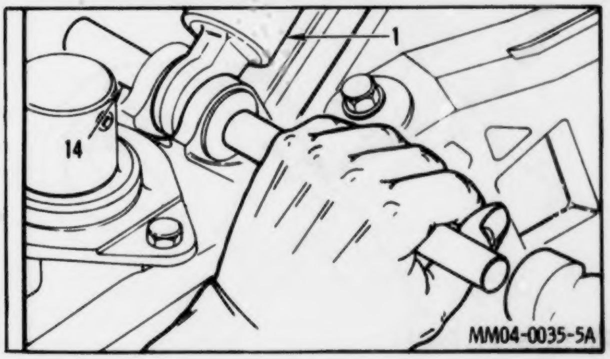
2. **Loosen clamp nut (5). Remove grounding bracket (6) and clamp (7) from shock strut (1).**

CAUTION

To prevent tailwheel from dropping when strut is removed, support tailwheel.

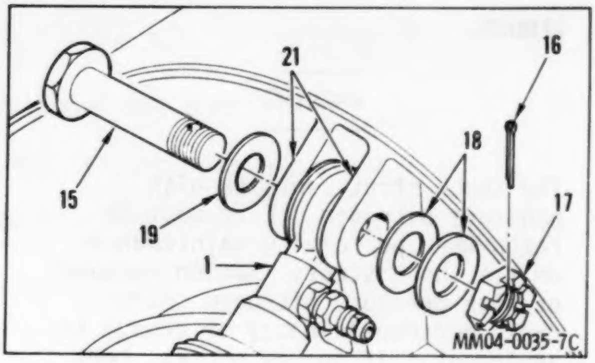


3. **Remove shock strut (1) bolt (8).**
   a. Remove and discard cotter pin (9).
   b. Hold bolt (8). Remove nut (10), washer (11), and cover (12) from bolt (8).
   c. Remove bolt (8) and cover (13).



4. **Remove pin (14) while helper supports shock strut (1).** Use driftpin.

GO TO NEXT PAGE



5. Remove bolt (15).

a. Remove and discard cotter pin (16).

b. Hold bolt (15). Remove nut (17) and washers (18). Use 15/16 wrench and 1-inch box wrench.

c. Remove bolt (15) and washer (19).

d. Remove strut (1).

B. CLEANING

Wipe all removed and attaching parts with a clean rag.

C. INSPECTION

1. **Check shock strut for leaks.** None allowed. Slight wetting of strut cylinder and seals insufficient to form a drop is normal.

2. **Check bolt hole of shock strut for elongation.** Maximum elongation 0.001-INCH.

3. **Check rod end bearings at both ends of shock strut for play.** Maximum radial and axial play 0.004-INCH.

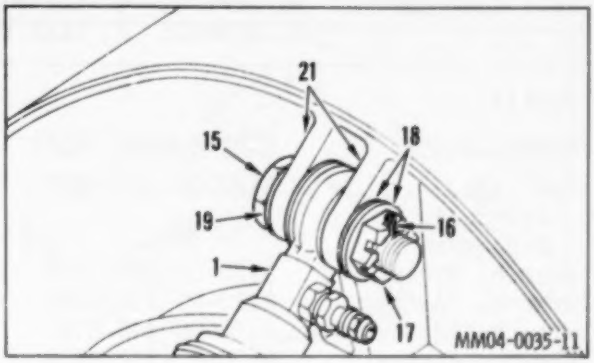
4. **Check shock strut for nicks, dents, or cracks.** None allowed.

GO TO NEXT PAGE

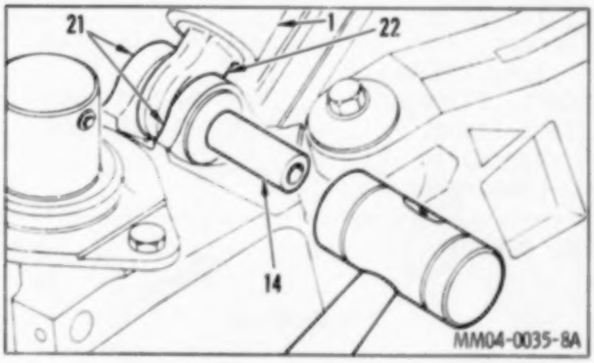
3-3-19. TAIL LANDING GEAR SHOCK STRUT REMOVAL/INSTALLATION (cont) 3-3-19

D. INSTALLATION

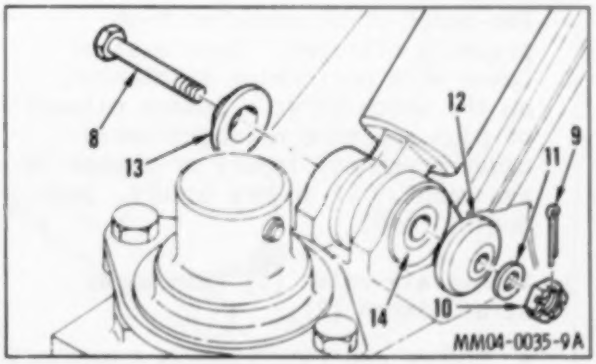
1. **Install bolt (15).** Torque nut (17) **400 to 440 INCH-POUNDS.**
   a. Position strut (1) between lugs (21). Install bolt (15) with washer (19).
   b. Install two washers (18) and nut (17). Torque nut (17) to **400 INCH-POUNDS.**
   c. Increase torque to aline cotter pin holes, but do not exceed **440 INCH-POUNDS.**
   d. Install new cotter pin (16).



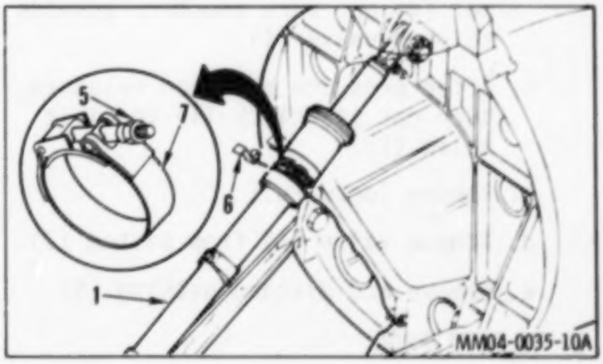
2. **Inspect (TI).**
3. **Install pin (14).** Position strut (1) between lugs (21). Install pin (14) through rod end (22) and lugs (21). Use rawhide mallet.



4. **Install bolt (8).**
   a. Install bolt (8) with cover (13) through pin (14), cover (12), and washer (11).
   b. Install nut (10) and new cotter pin (9).



5. **Install bracket (6) on clamp (7). Install nut (5) on shock strut (1).**
6. **Inspect (TI).**
7. **Inflate shock strut** (para 1-5-31).
8. **Remove tripod jack** (para 1-7-15).



END OF TASK

3-3-20. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) 3-3-20

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION
E. SERVICE F. LEAK CHECK

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Hydraulic Repairman's	5180-00-323-4891
Wrench, Strap	5120-00-242-3349
Wrench, Spanner	5120-00-215-1882
Wrench, Adjustable	5120-00-449-8082
Wrench, Torque, 1/4 Drive	5120-00-542-4489
Socket, Deep, 3/4, 3/8 Drive	5120-00-935-7444
Cart, Nitrogen	3655-00-534-0564
Test Stand, Hydraulic Components	4920-00-141-8801

Materials/Parts:

	Seal
	Scraper
	Retainer (2)
	Packing (3)
(E3)	Lockwire
(E13)	Fluid, Hydraulic
(E18)	Compound, Leak-Detection
(E19)	Primer
(E29)	Lockwire
(E68)	Brush

Personnel Required:

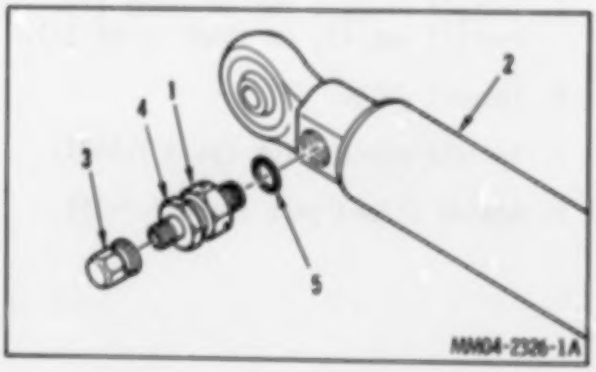
68H10	Aircraft Pneudraulics Repairer
66R30	Inspector/Supervisor

A. REMOVAL

WARNING

The shock strut contains high pressure nitrogen. Care must be taken when performing maintenance on the shock strut. Sudden release of high pressure nitrogen could cause personnel injury or damage to equipment. If injury occurs, seek medical aid.

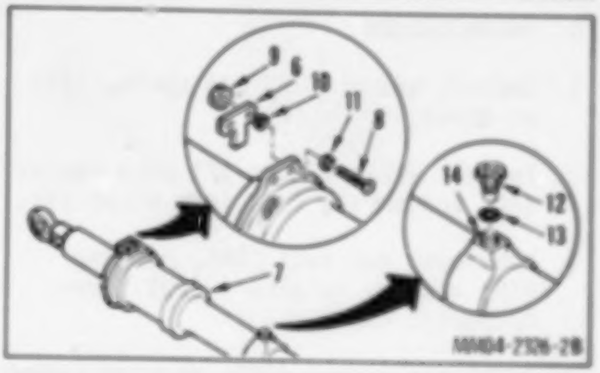
1. Remove air valve (1) from upper strut piston (2).
   a. Remove cap (3). Slowly turn nut (4) one turn counterclockwise to open valve (1).
   b. After pressure has been released, turn nut (4) clockwise to close valve (1).
   c. Remove lockwire.
   d. Remove valve (1) from piston (2).
   e. Remove and discard packing (5).

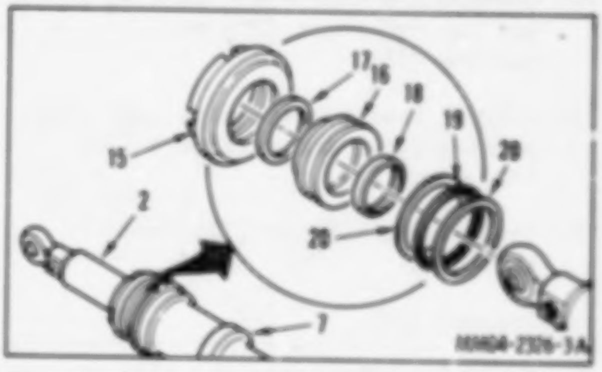


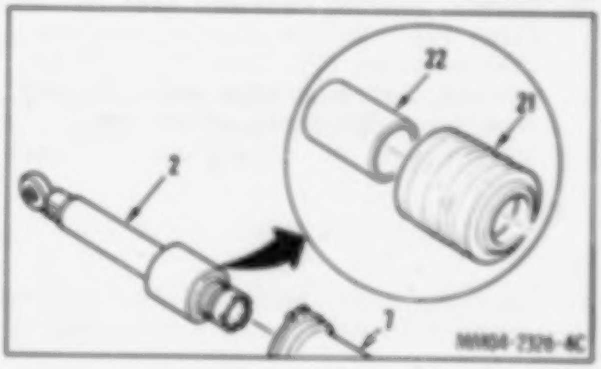
GO TO NEXT PAGE

3-3-20. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) (cont) 3-3-20

2. **Remove lock (6) from strut (7).**
    - a. Remove lockwire from two screws (8).
    - b. Hold two screws (8). Remove two nuts (9).
    - c. Remove two screws (8), spacers (10), washers (11), and lock (6) from strut (7).
3. **Remove bleed plug (12) and packing (13) from fill port (14).**
    - a. Remove plug (12) from port (14).
    - b. Remove and discard packing (13).
    - c. Drain fluid. Use pail to catch fluid spills. Discard fluid.
4. **Remove bearing retainer (15).** Use strap wrench and spanner wrench.
5. **Remove bearing (16) from strut (7).**
    - a. Until bearing (16) can be grasped, move piston (2) in and out.
    - b. Remove and discard scraper (17).
    - c. Remove bearing (16), seal (18), packing (19), and two retainers (20) from strut (7).
    - d. Discard seal (18), packing (19), and retainers (20).
6. **Remove strut piston (2), spring (21), and spacer (22) from strut (7).**







B. CLEANING

Clean bearing and retainer (para 1-5-36).

C. INSPECTION

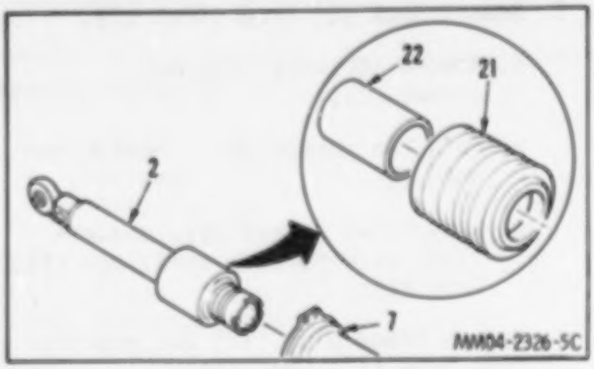
Check piston components for corrosion (para 1-5-38).

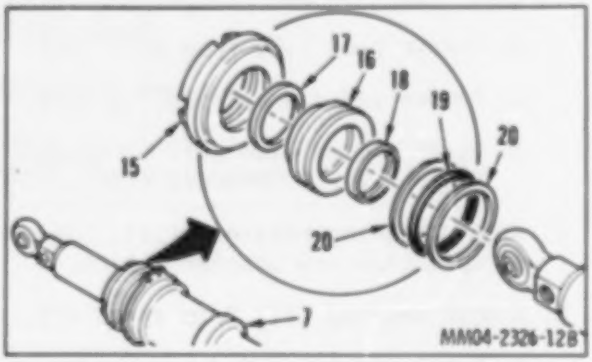
GO TO NEXT PAGE

3-3-20. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) (cont) 3-3-20

D. INSTALLATION

1. Install spacer (22) and spring (21) on strut piston (2).
2. Install strut piston (2) with spacer (22) and spring (23) into strut (7).
3. Lubricate new seal (18), packing (19) and two retainers (20). Use hydraulic fluid (E13).
4. Install new seal (18), packing (19), and two retainers (20) on bearing (16).
5. Install bearing (16) with seal (18), packing (19), and retainers (20) into strut (7).
6. Install new scraper (17) into strut (7).
7. Inspect (TI).
8. Install bearing retainer (15) on strut (7). Bottom bearing retainer (15) on strut (7), then back off to nearest slot to engage lock and lock in place. Use strap wrench and spanner.





GO TO NEXT PAGE

3-3-20. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) (cont) 3-3-20

9. **Install lock (6) around bearing retainer (15).** Torque two nuts to **25 INCH-POUNDS.**

   a. Coat surfaces of two screws (8), washers (11), and nuts (9). Use primer (E19) and brush (E68).

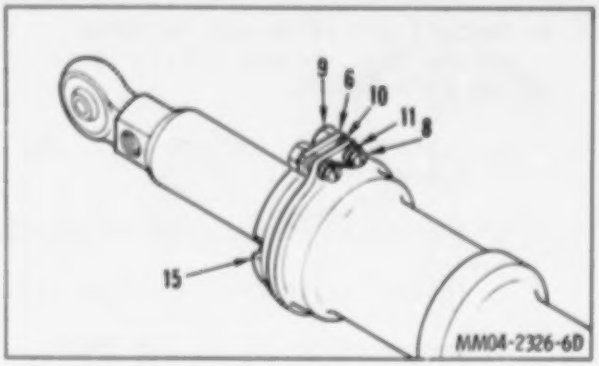
   b. Install two screws (8), washers (11), two spacers (10), and two nuts (9) while still wet with alined holes in lock (6) and strut (7).

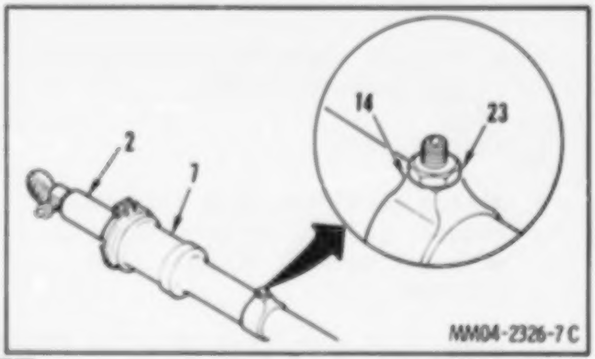
   c. Hold screws (8). Torque two nuts (9) to **25 INCH-POUNDS.**

   d. Lockwire two screws (8). Use lockwire (E29).

10. Inspect (TI).

E. SERVICE





WARNING

The shock strut contains high pressure nitrogen. Care must be taken when performing maintenance on the shock strut. Sudden release of high pressure nitrogen could cause personal injury or damage to equipment. If injury occurs, seek medical aid.

NOTE

Hand stroke upper piston 2 inches minimum from fully extended for a total of six cycles before filling shock strut with hydraulic fluid. Stop with upper piston fully compressed.

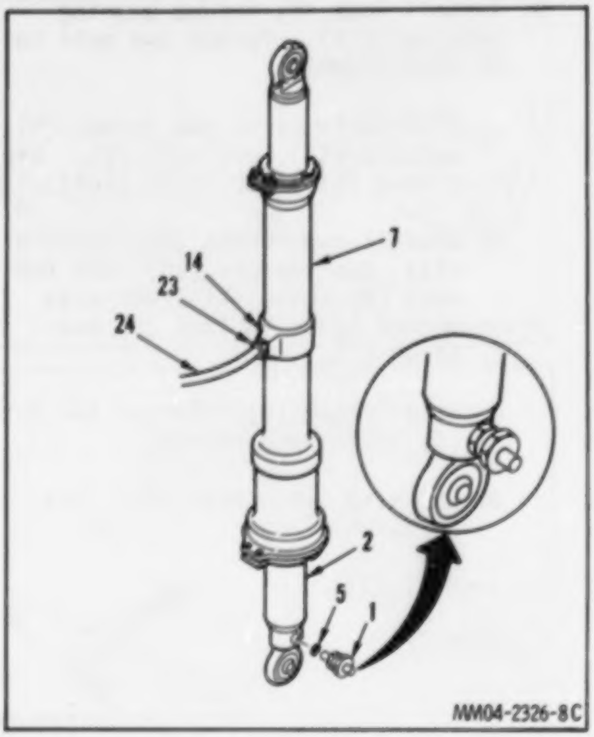
1. **Install reducer (23) in fill port (14).** Use adjustable wrench.

2. **Connect fill port (14) to hydraulic test stand.**

3. **Fill strut (7) with hydraulic fluid at 200 to 300 psi until upper strut piston (2) is fully extended.** Use hydraulic fluid (E13).

GO TO NEXT PAGE

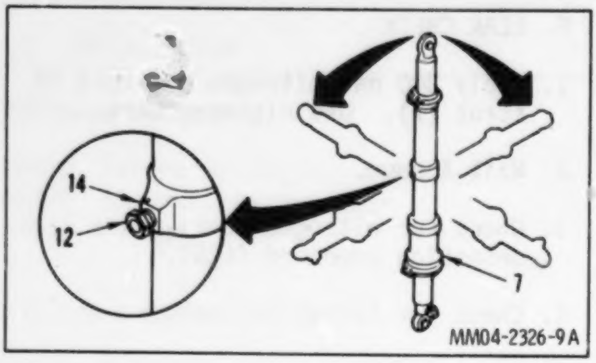
3-3-20. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) (cont) 3-3-20



4. Install air valve (1) in strut piston (2). Torque valve (1) to 105 INCH-POUNDS.
   a. Lubricate new packing (5). Use hydraulic fluid (E13).
   b. Install packing (5) on valve (1).
   c. Install valve (1) in piston (2).
   d. Torque valve (1) to 105 INCH-POUNDS. Use 3/4 deep socket.
   e. Install lockwire on valve (1). Use lockwire (E29).
5. Inspect (TI).
6. Attach servicing hose (24) to reducer (23). Charge strut (7) with nitrogen at 50 psi. Use nitrogen cart.
7. Bleed fill port (14) to drive fluid out of strut (7).
8. With strut (7) vertical and valve (1) down, apply 500 psi hydraulic pressure to fill port (14) for a minimum of 15 seconds and then release. Repeat procedure 10 times. Do not release pressure on last cycle.
9. Release nitrogen pressure to zero with strut (7) vertical.
10. Bleed hydraulic pressure from reducer (23). Disconnect servicing hose from supply.
11. Remove reducer (23) from fill port (14).

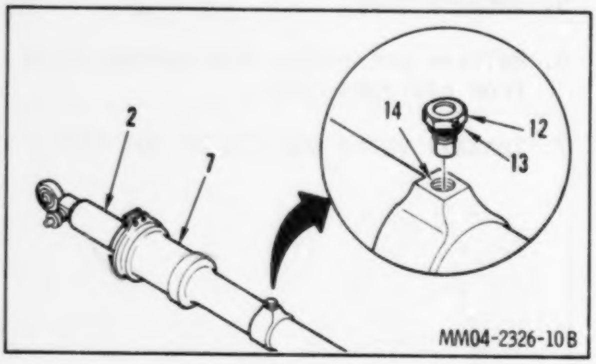
GO TO NEXT PAGE

12. Install bleed plug (12) lightly (do not tighten) to allow air but not fluid to escape. Very slowly move strut (7) to horizontal with fill port (14) up.



13. Slowly rock strut (7) back and forth end to end three or four times while gently tapping on cylinder barrel to allow all trapped air to escape through fill port (14). Allow strut (7) to remain horizontal at least 5 minutes.

14. Manually compress strut piston (2) fully.



15. Check that strut (7) is full. Repeat steps 1 thru 12 if strut is not full.

16. Install bleed plug (12).

    a. Lubricate new packing (13). Use hydraulic fluid (E13).

    b. Install packing (13) on plug (12).

    c. Install plug (12) into port (14).

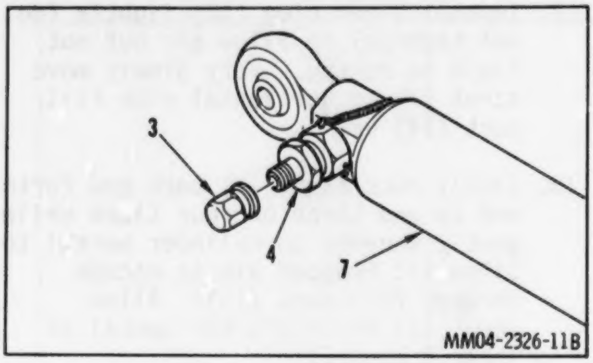
    d. Lockwire plug (12) to strut (7). Use lockwire (E29).

17. Inspect (TI).

18. Clean strut (para 1-5-36).

GO TO NEXT PAGE

3-3-20. TAIL LANDING GEAR SHOCK STRUT PISTON REMOVAL/INSTALLATION (AVIM) (cont) 3-3-20



F. LEAK CHECK

1. Apply 300 psi nitrogen pressure to strut (7). Use nitrogen cart.
2. Wait 1 hour.
3. Check for nitrogen leaks. Use leak-detection compound (E18).
4. Check for hydraulic leaks.
5. Inspect (TI).
6. Relieve pressure. Disconnect strut from nitrogen cart.
7. Install valve cap (3) on nut (4).

END OF TASK

3-3-21. TAIL LANDING GEAR SHOCK STRUT CHARGING VALVE REMOVAL/INSTALLATION 3-3-21

This task covers: A. REMOVAL B. CLEANING C. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

	Packing
(E29)	Lockwire
(E13)	Fluid, Hydraulic

Personnel Required:

68R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

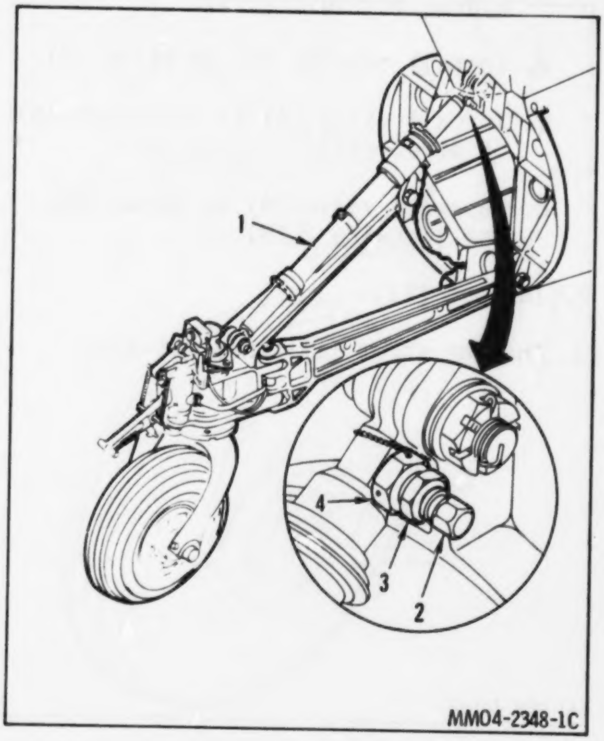
Ref	Condition
1-7-2	Helicopter safed

A. REMOVAL

WARNING

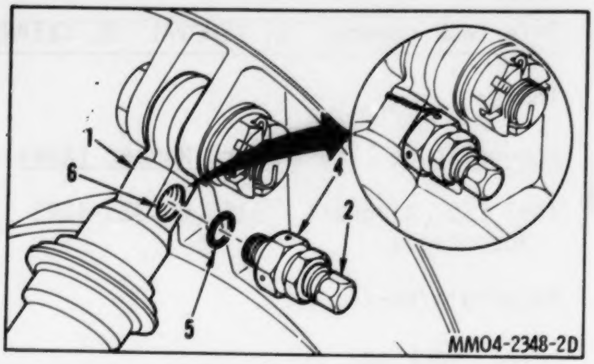
The strut contains high pressure nitrogen. Care must be taken when performing maintenance on the strut. Sudden release of high pressure nitrogen could cause personnel injury or damage to equipment. If injury occurs, seek medical aid.

1. Deflate strut (1).
   a. Remove valve cap (2).
   b. Slowly turn nut (3) one turn counterclockwise to open air valve (4).
   c. Turn nut (3) one turn clockwise to close valve (4) after pressure has been released.
   d. Install valve cap (2).



GO TO NEXT PAGE

3-3-21. TAIL LANDING GEAR SHOCK STRUT CHARGING VALVE REMOVAL/INSTALLATION (cont) 3-3-21



2. Remove lockwire from valve (4).

3. Remove valve (4) from strut (1).

4. Remove and discard packing (5).

B. CLEANING

Clean valve port in strut (para 1-5-36).

C. INSTALLATION

1. Install valve (4) in strut (1).
   a. Lubricate new packing (5). Use hydraulic fluid (E13).
   b. Install packing (5) on valve (4).
   c. Install valve (4) in fill port (6) of strut (1).
   d. Lockwire valve (4) to strut (1). Use lockwire (E29).

2. Inspect (TI).

3. Inflate strut (1) (para 1-5-31).

END OF TASK

3-3-22. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) AND AXLE REMOVAL 3-3-22

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4891
Wrench, Spanner	5120-00-215-1882

Personnel Required:

68R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-2620-200-24

Equipment Conditions:

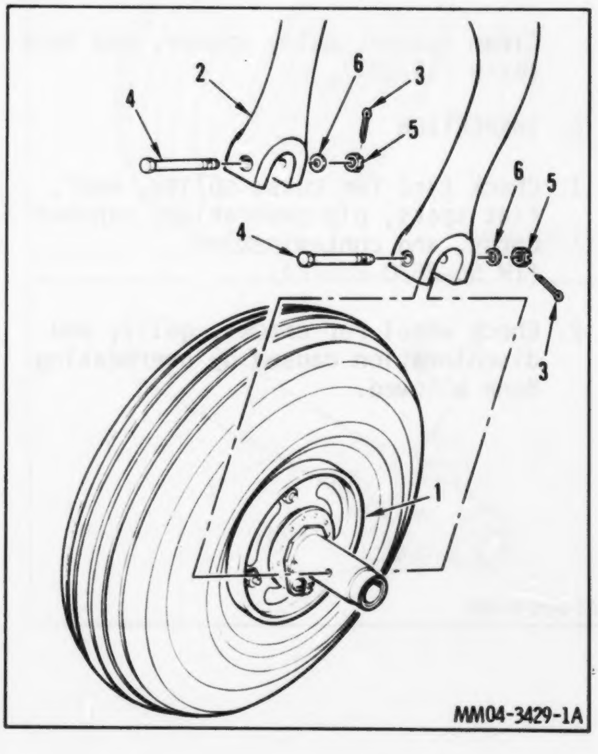
Ref	Condition
1-7-2	Helicopter safed
1-7-14	Tail landing gear jacked (axle jack)

A. REMOVAL

WARNING

Deflate tire before handling the wheel. Failure to deflate the tire can result in the valve core and valve separating with extreme force. If injury occurs, seek medical aid.

1. **Deflate tire.**
2. **Remove wheel (1) from fork (2).**
    a. Remove two cotter pins (3).
    b. Hold two bolts (4). Remove two nuts (5) and washers (6).
    c. Support wheel (1). Remove two bolts (4).
    d. Remove wheel (1) from fork (2).



GO TO NEXT PAGE

3-3-22. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) AND AXLE REMOVAL (cont) 3-3-22

3. **Remove spacer (7) from axle (8).**

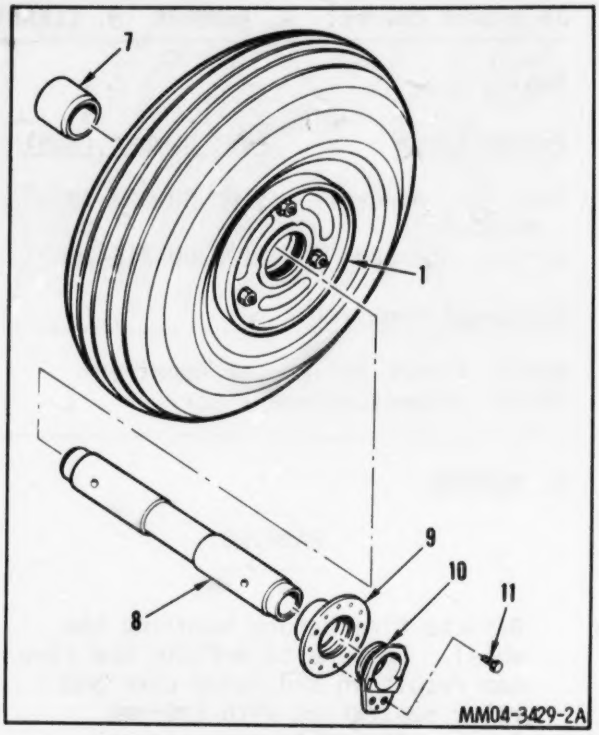
4. **Remove axle (8) from wheel (1).**

5. **Remove spacer (9) and lock (10) from axle (8).** Use spanner wrench.

6. **Remove spacer (9) from lock (10).**

   a. Remove lockwire from screw (11). Remove screw (11).

   b. Turn spacer (9) counterclockwise to loosen lock (10).



B. CLEANING

Clean spacer, axle, spacer, and lock (para 1-5-36).

C. INSPECTION

1. **Check tire for cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination (TM 55-2620-200-24).**

2. **Check wheel for cracks, galls, and discoloration caused by overheating. None allowed.**

END OF TASK

3-3-23. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) AND AXLE INSTALLATION 3-3-23

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4891
Wrench, Spanner	5120-00-215-1882
Inflator, Tire	4920-00-781-8423
Cart, Nitrogen	3655-00-534-0564

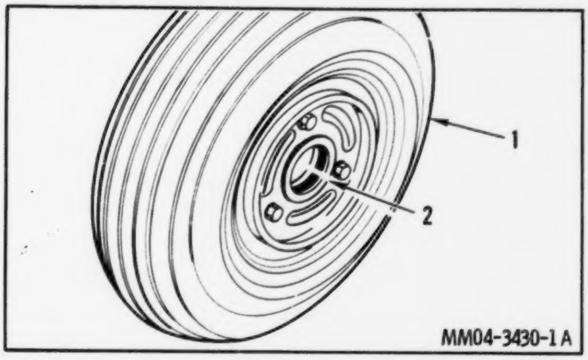
Materials/Parts:

	Cotter Pin (2)
(E5)	Grease
(E8)	Lockwire

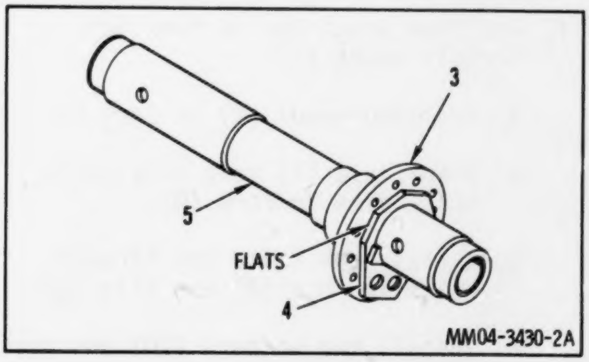
Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

1. Inflate tire (1) to 50 psi. Use inflator and nitrogen cart.
2. Check that bearings have been greased.
3. Apply grease (E5) to lip of seal (2).



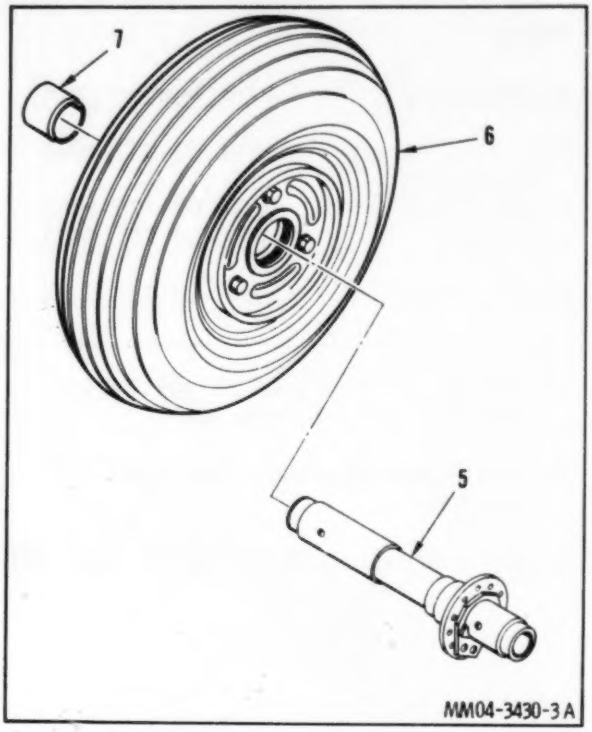
4. Screw spacer (3) and lock (4) together.
5. Install assembled spacer (3) and lock (4) on axle (5).



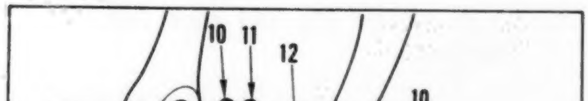
GO TO NEXT PAGE

3-3-23. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) AND AXLE INSTALLATION (cont) 3-3-23

6. Slide axle (5) into wheel (6).
7. Slide spacer (7) on axle (5).

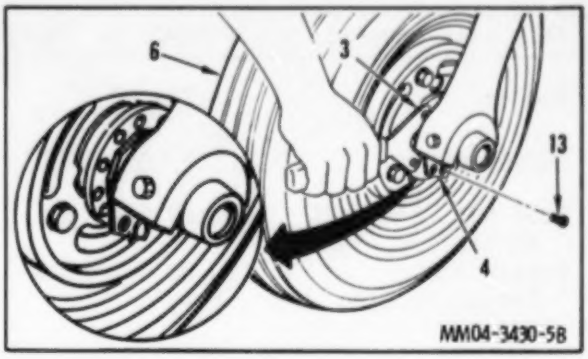


8. Position wheel (6) in fork (8). Install bolts (9).
   a. Position wheel (6) in fork (8).
   b. Aline axle (5) bolt holes with bolt holes in fork (8).
   c. Install two bolts (9) through holes in fork (8) and axle (5).
   d. Install two washers (10) and nuts (11) on two bolts (9).
   e. Hold two bolts (9). Tighten two nuts (11).
   f. Install two new cotter pins (12) in two bolts (9).



GO TO NEXT PAGE

3-3-23. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) AND AXLE INSTALLATION (cont) 3-3-23



9. Adjust spacer (3).

a. Rotate wheel (6) by hand.

CAUTION

Do not tighten axle nut until a heavy drag is felt. Possible damage to wheel bearings may occur.

b. Tighten spacer (3) until bearings are firmly seated and a slight drag in bearings can be felt. Use spanner wrench.

c. Back off spacer (3) one full turn.

d. Repeat step b.

10. Install screw (13).

a. Aline holes in lock (4) with closest holes in spacer (3).

b. Install screw (13).

c. Lockwire screw (13) to lock (4). Use lockwire (E8).

11. Inspect (TI).

12. Inflate tire to 95 psi. Use nitrogen cart and inflator.

13. Remove axle jack (para 1-7-14).

END OF TASK

3-3-24. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TIRE AND TUBE REMOVAL 3-3-24

This task covers: A. REMOVAL B. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4891
Repair Tool, Pneumatic Tire Valve	5120-00-308-3809

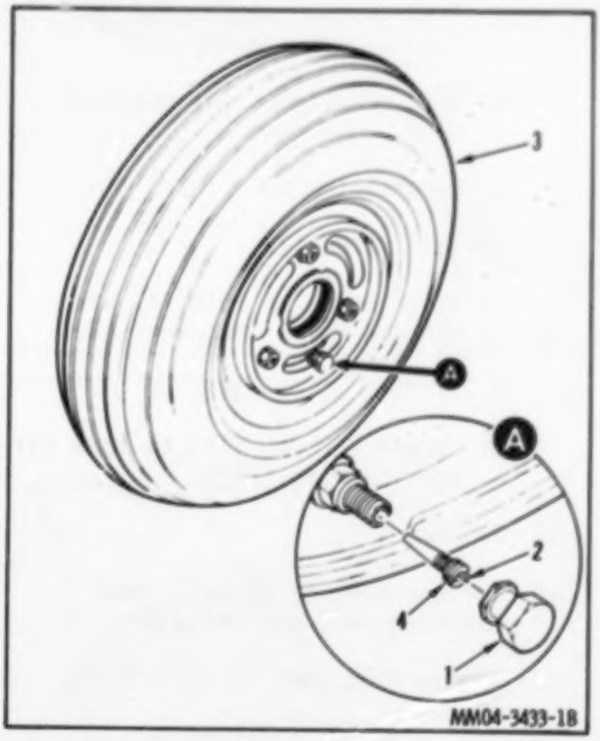
Personnel Required:

67R10 Attack Helicopter Repairer

References:

TM 55-2620-200-24

A. REMOVAL



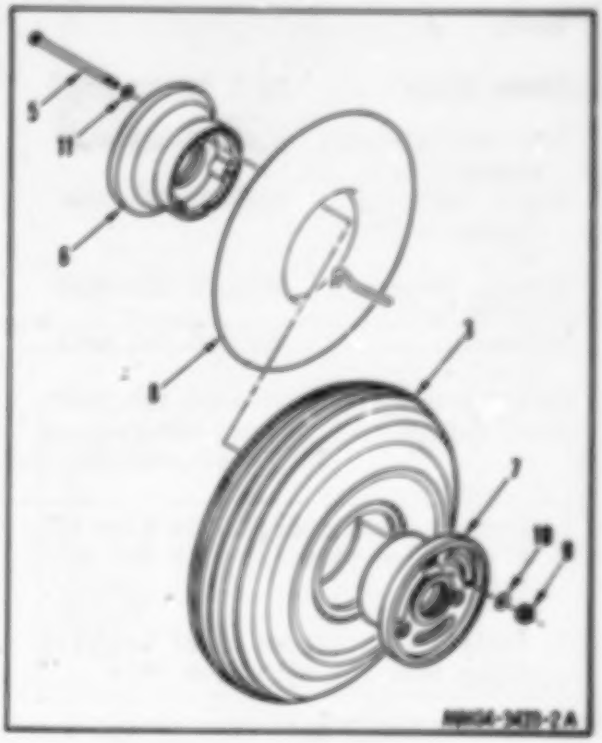
WARNING

- Do not take wheel apart before deflating tire. Pressure on loosened nuts could cause nuts to break loose and wheel halves to separate suddenly. Persons nearby could be injured by flying parts. If injury occurs, seek medical aid.
- Do not remove valve core from valve stem until all nitrogen is out of tire. Pressure on loosened core could cause core to be blown from stem and injure personnel. If injury occurs, seek medical aid.

1. Deflate tire.
   a. Remove valve cap (1).
   b. Press valve core end (2) to deflate tire (3). Remove valve core (4). Use valve repair tool.

GO TO NEXT PAGE

3-3-24. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TIRE AND TUBE REMOVAL (cont) 3-3-24



2. Remove three wheel bolts (5). Remove wheel halves (6) and (7) from tire (3). Remove tube (8) from tire (3).

   a. Hold three bolts (5). Remove three nuts (9).

   b. Remove three washers (10).

   c. Remove three bolts (5) and washers (11) from wheel halves (6) and (7).

   d. Pull wheel halves (6) and (7) from tire (3).

   e. Remove tube (8) from tire (3).

B. INSPECTION

1. Check tire from cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination (TM 55-2620-200-24).

2. Check wheel halves for cracks, galls, and discoloration caused by overheating. None allowed.

3. Check tube for creases, cuts, holes, and punctures (TM 55-2520-200-24).

END OF TASK

3-3-25. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TIRE AND TUBE INSTALLATION 3-3-25

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Repair Tool, Pneumatic Tire Valve	5120-00-308-3809
Wrench, Torque, 1/4 Drive	5120-00-585-8434
Inflator, Tire	4920-00-781-8423
Cart, Nitrogen	3655-00-534-0564
Cage, Safety	Local Manufacture (TM 55-1520-204-25/1)

Materials/Parts:

(E17) Compound, Thread
(E18) Compound, Leak-Detection

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

References:

TM 55-1500-204-25/1

1. **Install inner tube (1) in tire (2).** Aline valve stem (3) with dot on tire (2).

2. **Install tire (2) on wheel half (4).** Aline slot (5) with stem (3).

3. **Install wheel half (6).** Aline wheel half (6) valve stem hole (7) with valve stem (3). Push wheel half (6) into tire (2) until wheel halves (4) and (6) touch.

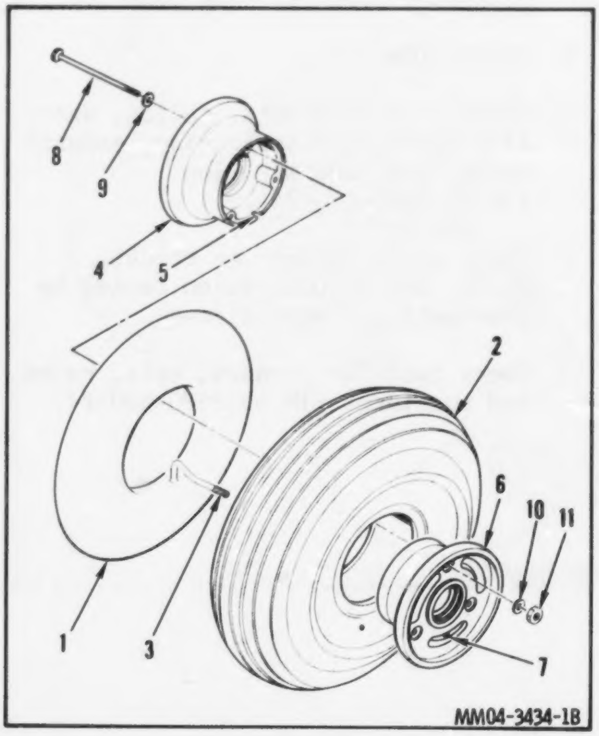
4. **Install three bolts (8) with three washers (9) through wheel halves (4) and (6).**

5. **Coat threads of bolt (8) with thread compound.** Use compound (E17).

6. **Install three washers (10) and nuts (11) on three bolts (8).** Hold three bolts (8).

7. **Torque three nuts (11) to 65 INCH-POUNDS.**

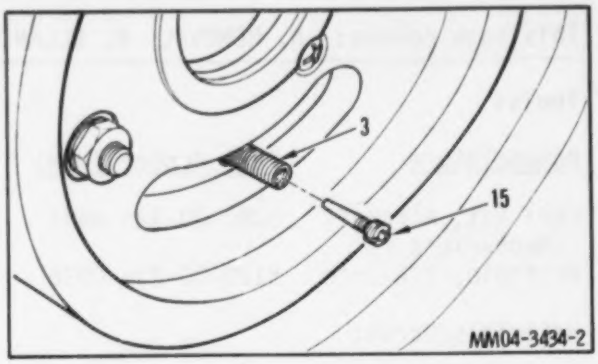
8. **Inspect (TI).**



GO TO NEXT PAGE

3-3-25. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) TIRE AND TUBE INSTALLATION (cont) 3-3-25

9. Install valve core (15) in valve stem (3). Use valve repair tool.



MM04-3434-2

WARNING

- Wheel and tire must be in safety cage when tire is being inflated. Tire could blow off wheel, or personnel could be injured by flying parts. If injury occurs, seek medical aid.
- Allow 30 minutes before removing inflated tire from safety cage.

10. Place wheel and tire in safety cage (18) (TM 55-2620-200-24).

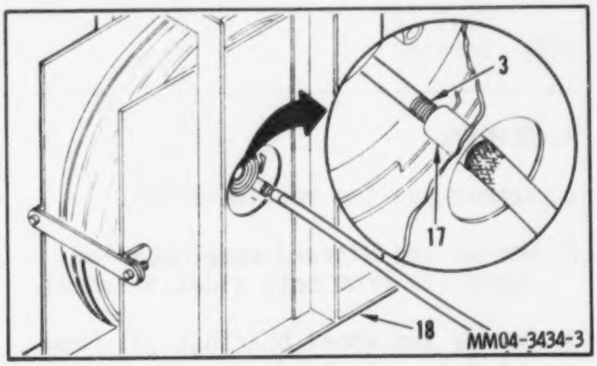
11. Inflate tire to 95 psi.

    a. Connect chuck (17) to valve stem (3).

    b. Inflate tire to 95 psi. Use tire inflator and nitrogen cart.

    c. Disconnect chuck (17) from valve stem (3).

    d. Wait 30 minutes before removing wheel and tire from safety cage.

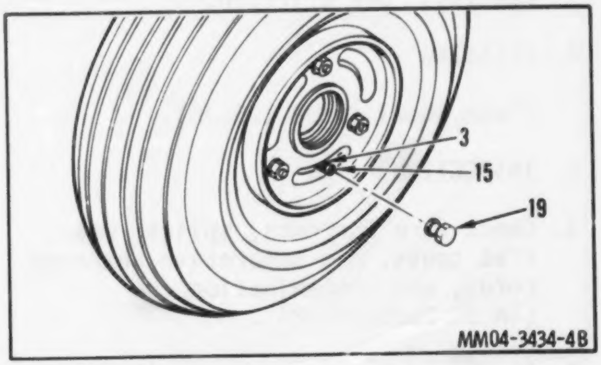


MM04-3434-3

12. Remove wheel and tire from cage.

13. Check wheel and tire for leaks. Check valve stem (3) and around wheel rim. Use leak detection compound (E18).

14. Install valve cap (19) on valve stem (3).



MM04-3434-4B

15. Inspect (TI).

END OF TASK

3-3-26. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) BEARING REMOVAL/INSTALLATION 3-3-26

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4891
Driftpin, 1/2-inch	5120-00-239-0036

Materials/Parts:

Seal (2)
(E5) Grease

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

References:

TM 55-2620-200-24

A. REMOVAL

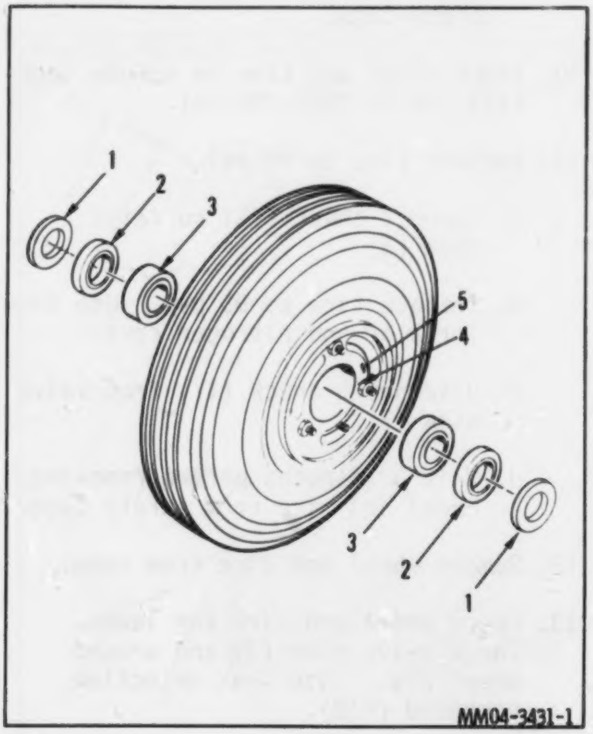
1. Remove bearing retainers (1).
2. Remove and discard wheel bearing seals (2) from both sides of wheel.
3. Remove two wheel bearings (3) from hub (4). Use driftpin.

B. CLEANING

Clean wheel (para 1-5-36).

C. INSPECTION

1. Check tire for cuts, splits, wear, flat spots, ply separation, exposed cords, and contamination (TM 55-2520-200-24).
2. Check wheel for cracks, galls, and discoloration caused by overheating. None allowed.
3. Check bearing retainer and seal for deterioration and damage. None allowed.
4. Check bearings (TM 55-1500-322-24).

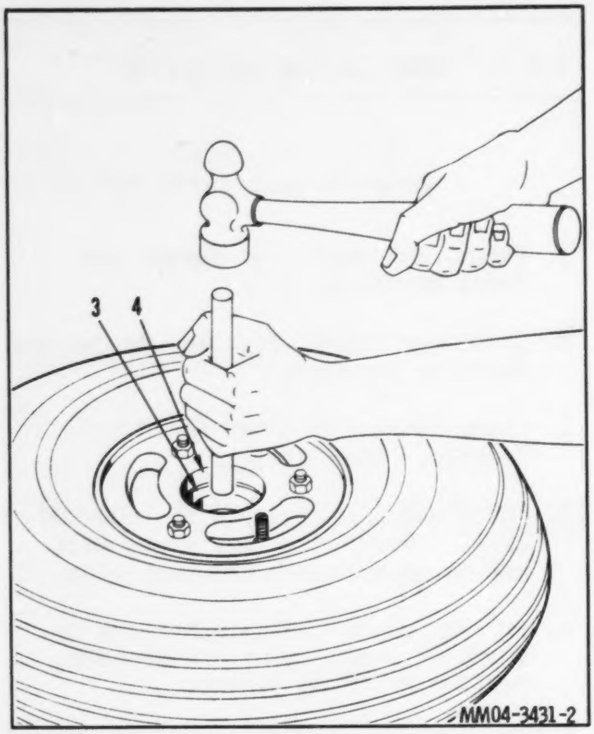


GO TO NEXT PAGE

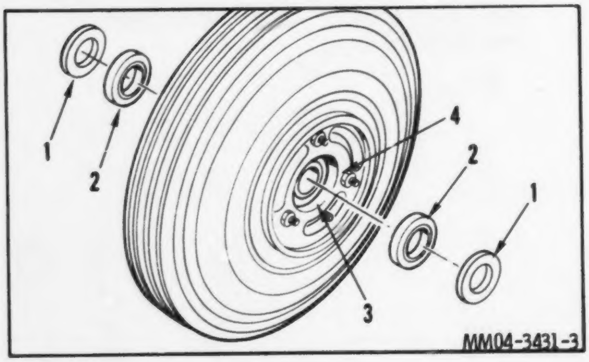
3-3-26. TAIL LANDING GEAR WHEEL (WITHOUT GREASE FITTING) BEARING REMOVAL/INSTALLATION (cont) 3-3-26

D. INSTALLATION

1. Pack bearings (3) (para 3-3-13). Use grease (E5).
2. Install one wheel bearing (3) in each side of hub (4). Seat bearings (3) against inner lip of hub (4).



3. Install new seals (2) into hub (4).
4. Install new bearing retainers (1) in hub (4).
5. Inspect (TI).



END OF TASK

SECTION IV. BRAKE SYSTEM MAINTENANCE PROCEDURES

3-4-1. BRAKE SYSTEM INSPECTION 3-4-1

NOTE

Refer to para 7-2-1 for additional limits and corrective actions.

1. Check components for damage and loose mounting.
2. Check for loose, missing, or damaged mounting hardware.
3. Check hydraulic lines for fluid leakage. None allowed.
4. Check wheel brakes (TM 55-1500-204-25/1). Brake disk key slots must not be more than 0.970-inch wide.
5. If less than 0.0625-inch thick or signs of overheating are present, replace friction linings.
6. Check master cylinder rod end for radial/axial play (0.002-inch maximum play).
7. Check master cylinders, parking brake, and transfer valves for leakage. None allowed. Slight wetting of cylinder and seals insufficient to form a drop is normal.
8. Check master cylinder for cracks, nicks, or dents. None allowed.
9. Check brake pedal linkage for looseness or misalinement.
10. Check brake disks for cracks. Replace disks that have cracks extending through disk.
11. Check brake lining recession piston, center carrier, and anvil for indications of wear which could cause loss of linings.

END OF TASK

3-4-2. PARKING BRAKE VALVE REMOVAL/INSTALLATION 3-4-2

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

	Cotter Pin
	Packing (4)
(E13)	Hydraulic Fluid

Personnel Required:

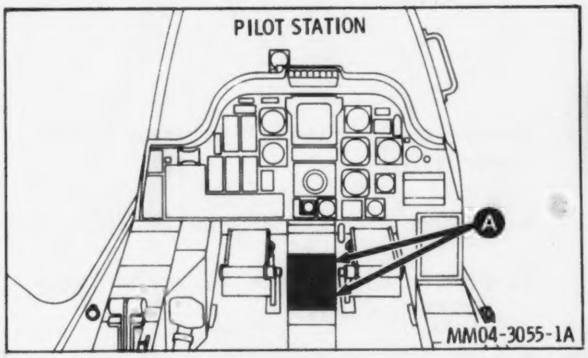
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

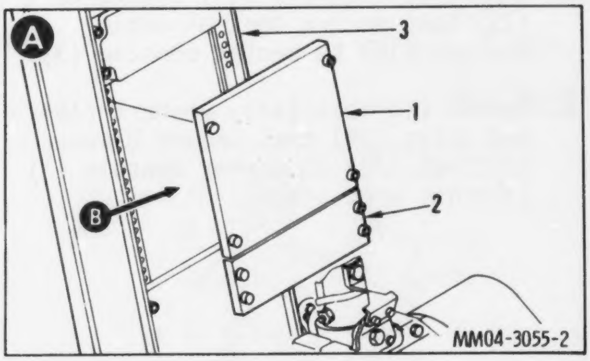
References:

TM 55-1520-238-T
TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-12	CPG seat tilted forward; No. 2 engine power lever moved forward





A. REMOVAL

1. **Place wheel chocks.**

2. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

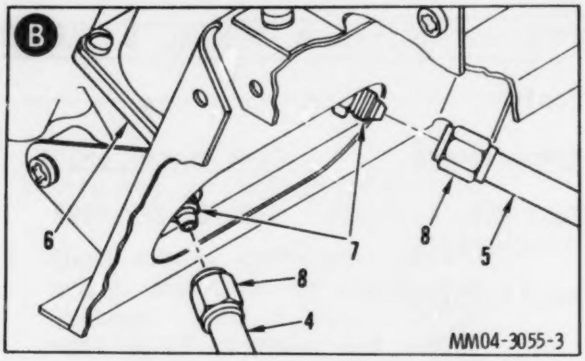
3. **Release parking brakes (para 1-7-6).**

4. **Remove panels (1) and (2) from center console (3).**

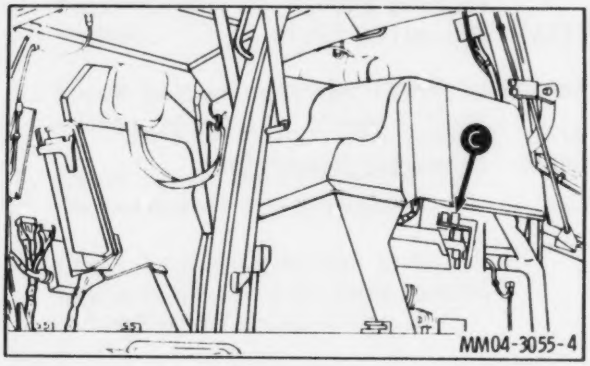
GO TO NEXT PAGE

3-4-2. PARKING BRAKE VALVE REMOVAL/INSTALLATION (cont) 3-4-2

5. **Disconnect bleeder valve tubes (4) and (5) from valve (6).** Hold unions (7). Remove tube nuts (8).



6. **Enter CPG station** (para 1-7-1). **Observe all safety precautions.**



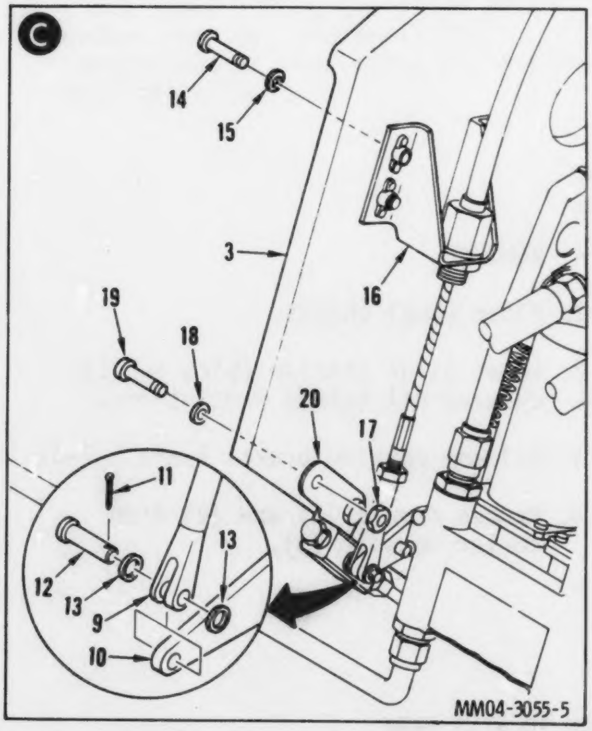
7. **Remove cable clevis (9) from valve lever (10).**

   a. Remove and discard cotter pin (11).

   b. Remove clevis pin (12) and two washers (13).

8. **Remove four screws (14) and washers (15) that secure control cable bracket (16) to center console (3).**

9. **Remove two nuts (17), washers (18), and bolts (19) that secure bleeder fittings (20) to center console (3) (typical both sides).**

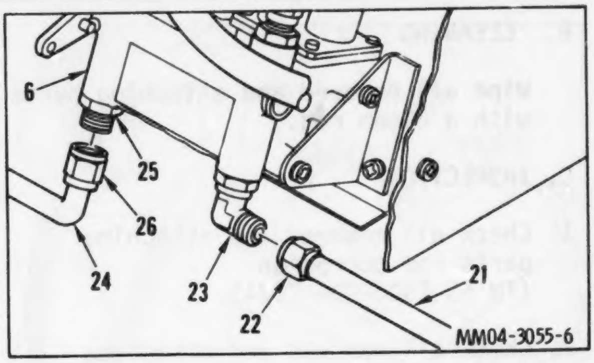


GO TO NEXT PAGE

3-4-2. PARKING BRAKE VALVE REMOVAL/INSTALLATION (cont) 3-4-2

10. **Remove tube (21) from valve (6).** Remove nut (22) from elbow (23).

11. **Remove tube (24) from valve (6).** Hold union (25). Remove nut (26).



12. **Remove tubes (27) and (28) from valve (6) and transfer valves (29).**

    a. Hold two unions (30). Remove two tube nuts (31).

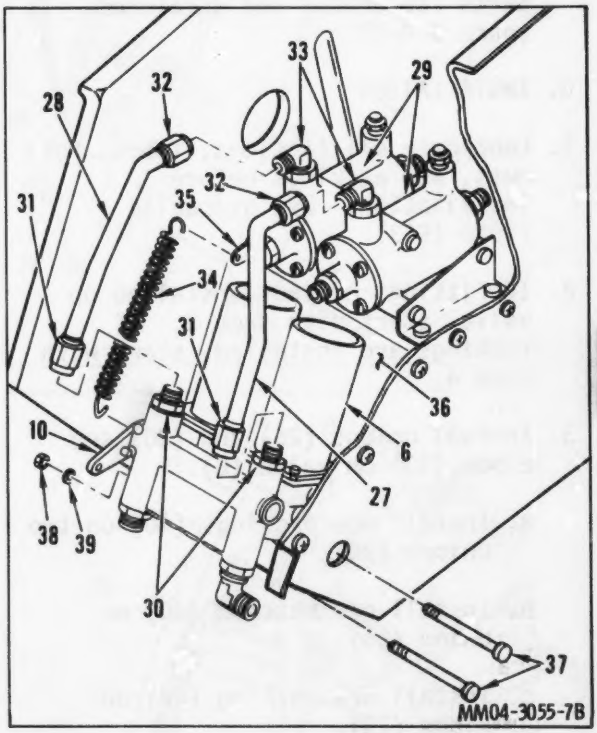
    b. Remove two tube nuts (32) from two elbows (33).

13. **Remove cable return spring (34) from valve lever (10) and tab (35).**

14. **Remove valve (6) from bracket (36).**

    a. Hold two screws (37). Remove two nuts (38).

    b. Remove two screws (37) and washers (39).



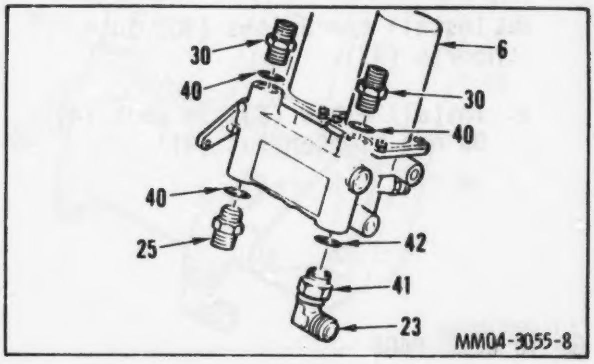
15. **Remove unions (25) and (30) and elbow (23) if replacing valve (6).**

    a. Remove unions (25) and (30).

    b. Remove and discard packings (40).

    c. Loosen nut (41). Remove elbow (23).

    d. Remove and discard packing (42).



GO TO NEXT PAGE

3-4-2. PARKING BRAKE VALVE REMOVAL/INSTALLATION (cont) 3-4-2

B. CLEANING

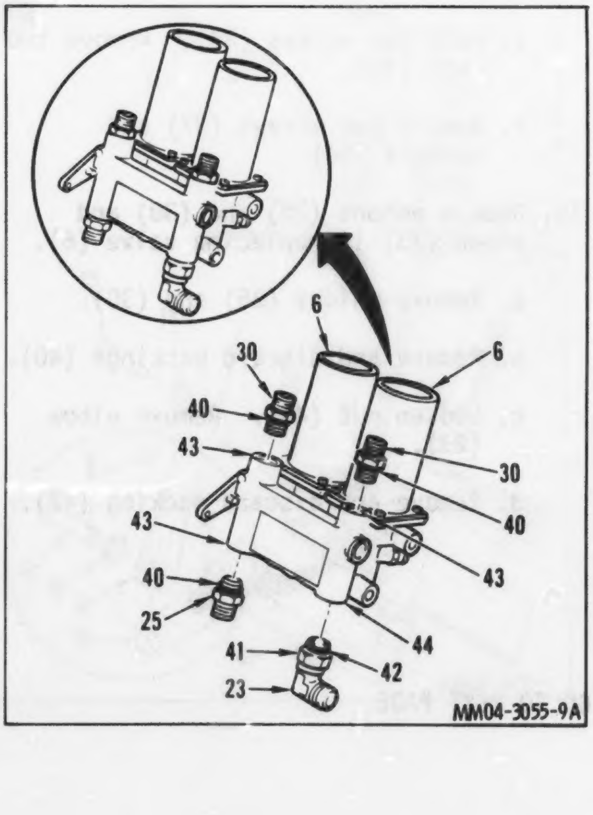
Wipe all removed and attaching parts with a clean rag.

C. INSPECTION

1. Check all removed and attaching parts for corrosion (TM 55-1500-204-25/1).
2. Check all removed and attaching parts for cracks and scratches (para 3-4-1).

D. INSTALLATION

1. Lubricate all fittings, tubes, hose nuts, and packings before installation. Use hydraulic fluid (E13).
2. If fittings are not installed on valve, start with step 3. If fittings are installed, start with step 4.
3. Install unions (25) and (30) and elbow (23) on valve (6).
    - a. Install new packings (40) on two unions (30).
    - b. Install new packing (40) on union (25).
    - c. Install new packing (42) on elbow (23).
    - d. Install two unions (30) into ports (43).
    - e. Install elbow (23) in port (4). Do not tighten nut (41).



GO TO NEXT PAGE

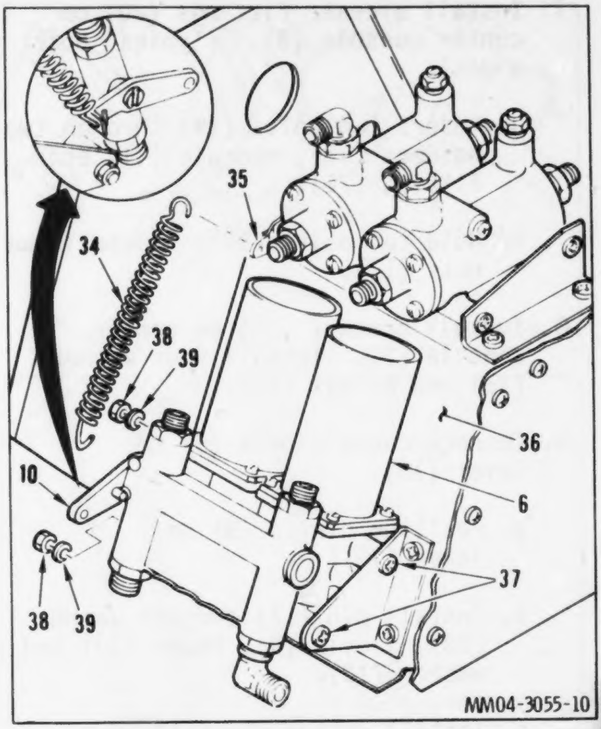
3-4-2. PARKING BRAKE VALVE REMOVAL/INSTALLATION (cont) 3-4-2

4. **Install valve (6) on bracket (36).**

   a. Position valve (6) on bracket (36). Install two screws (37) through valve (6).

   b. Hold two screws (37). Install two washers (39) and nuts (38).

5. **Install cable return spring (34).** Attach spring (34) to lever (10) and tab (35).

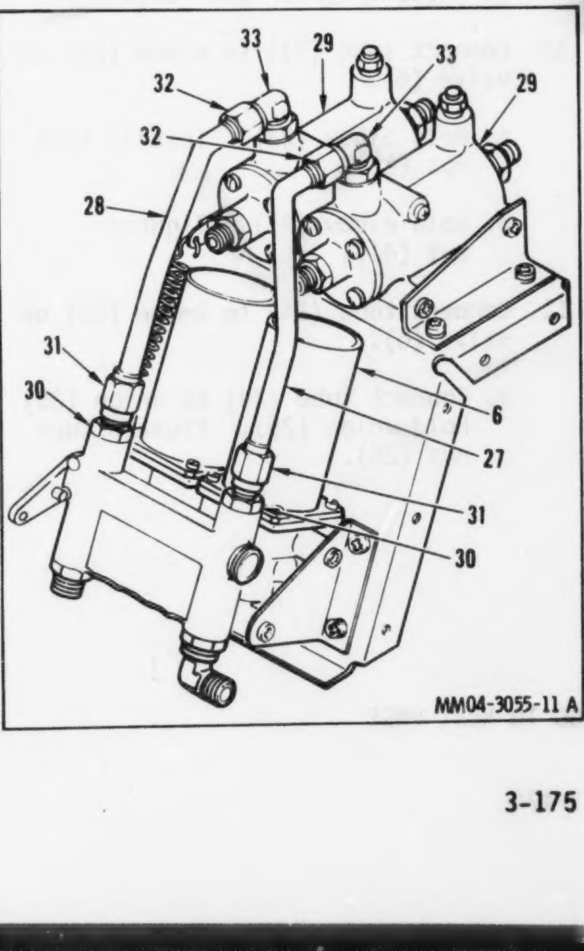


6. **Connect tubes (28) and (27) to valve (6) and valves (29).**

   a. Connect tubes (28) and (27) to elbows (33) and unions (30).

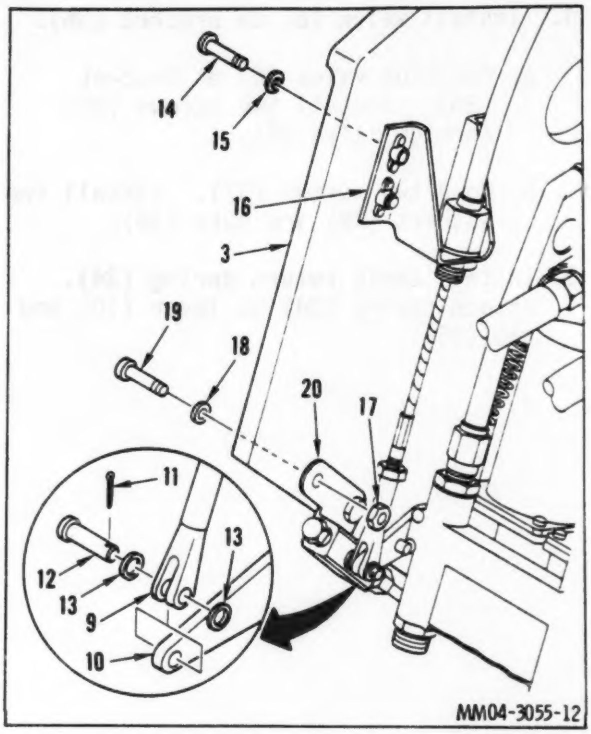
   b. Hold two elbows (33). Tighten two nuts (32).

   c. Hold two unions (30). Tighten two nuts (31).



GO TO NEXT PAGE

3-4-2. PARKING BRAKE VALVE REMOVAL/INSTALLATION (cont) 3-4-2



7. Install bleeder fittings (20) on center console (3). (Typical both sides).

a. Insert two bolts (19) through two washers (18), console (3), and fitting (20).

b. Hold two bolts (19). Install two nuts (17).

8. Install bracket (16) on center console (3). Install four washers (15) and screws (14).

9. Connect cable clevis (9) to lever (10).

a. Position clevis (9) on lever (10).

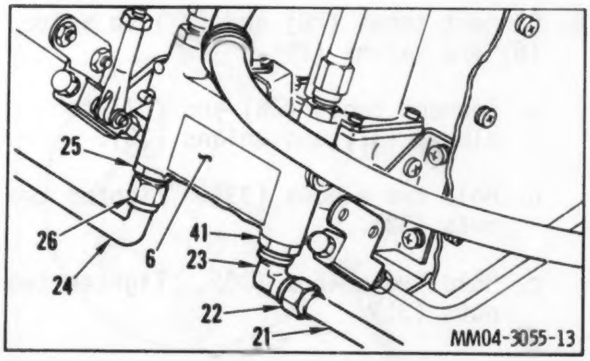
b. Install pin (12) through washer (13), clevis (9), lever (10) and washer (13).

c. Install cotter pin (11).

10. Connect tube (21) to elbow (23) on valve (6).

a. Hold elbow (23). Install tube nut (22).

b. Hold elbow (23). Tighten nut (41).



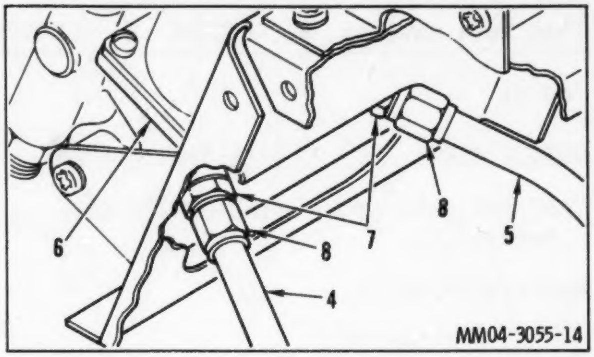
11. Connect tube (24) to union (25) on valve (6).

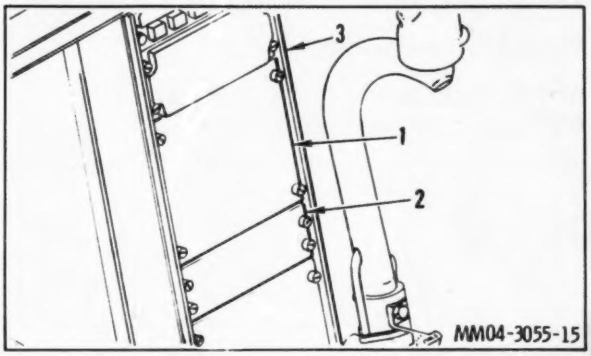
a. Connect tube (24) to union (25). Hold union (25). Tighten tube nut (26).

GO TO NEXT PAGE

3-4-2. PARKING BRAKE VALVE REMOVAL/INSTALLATION (cont) 3-4-2

12. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**
13. **Connect tubes (4) and (5) to valve (6).**
    - a. Connect tube nuts (8) to unions (7).
    - b. Hold two unions (7). Tighten two tube nuts (8).
14. **Bleed brake system** (para 1-5-34).
15. **Inspect (TI).**
16. **Install panels (1) and (2) on center console (3).**
17. **Secure CPG seat** (para 2-3-12). With No. 2 engine power handle set to lockout.
18. **Perform main landing gear operational check** (TM 55-1520-238-T).





END OF TASK

3-4-3. TRANSFER VALVES REMOVAL/INSTALLATION 3-4-3

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

	Packing (6)
(E13)	Hydraulic Fluid

Personnel Required:

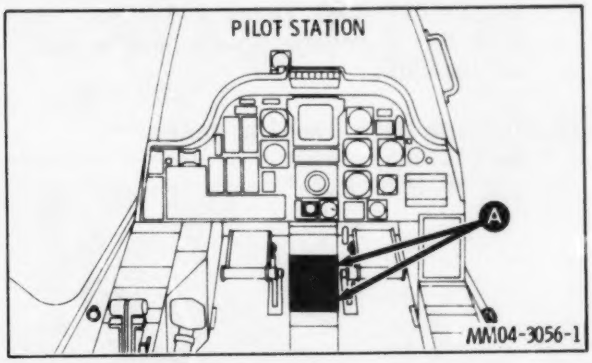
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

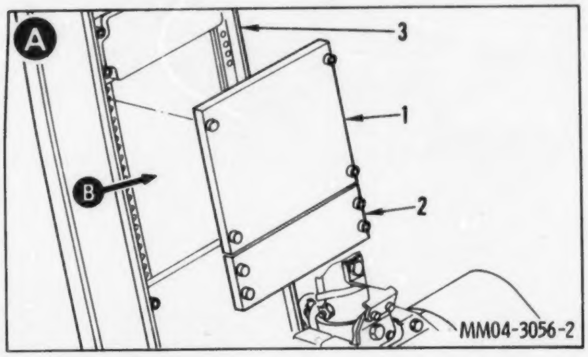
References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-12	CPG seat tilted forward; No. 2 engine power lever moved forward



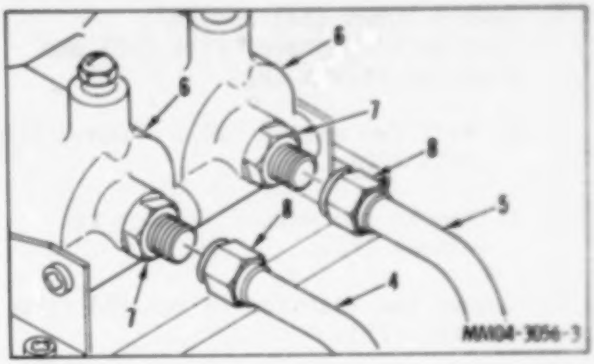


A. REMOVAL

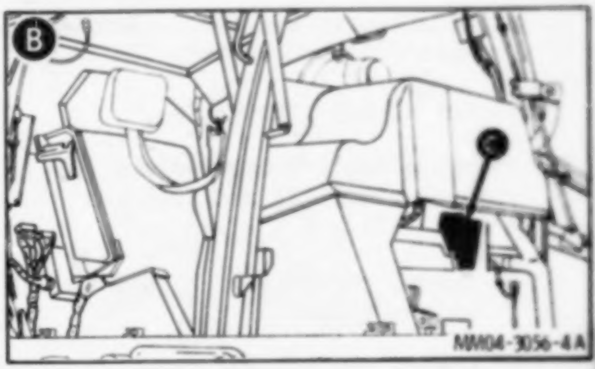
1. Place wheel chocks.
2. Enter pilot station (para 1-7-1). Observe all safety precautions.
3. Release parking brakes (para 1-7-6).
4. Remove panels (1) and (2) from center console (3).

GO TO NEXT PAGE

5. **Remove tubes (4) and (5) from transfer valves (6).** Hold two unions (7). Remove two nuts (8).



6. **Enter CPG station (para 1-7-1). Observe all safety precautions.**

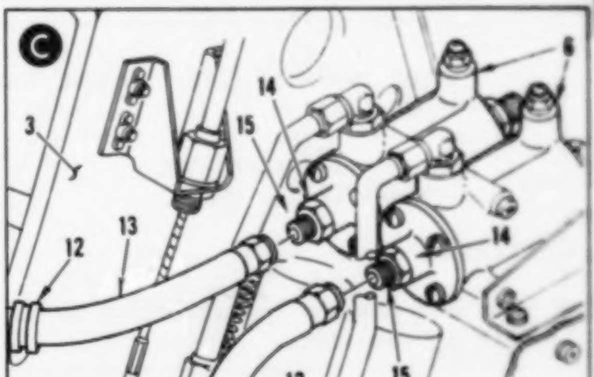


7. **Remove two nuts (9), washers (10), and screws (11) that secure clamps (12) and hoses (13).**

   a. Hold two screws (11). Remove two nuts (9).

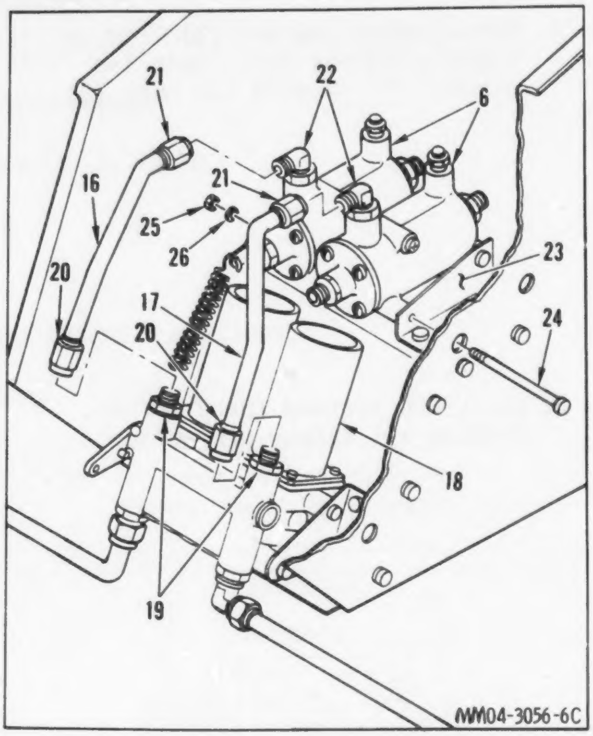
   b. Remove two screws (11) and washers (10).

8. **Remove two hoses (13) from transfer valves (6).** Hold two unions (14). Remove two hose nuts (15).



GO TO NEXT PAGE

3-4-3. TRANSFER VALVES REMOVAL/INSTALLATION (cont) 3-4-3



9. **Remove tubes (16) and (17) from parking brake valve (18) and transfer valves (6).**

   a. Hold two unions (19). Remove two nuts (20).

   b. Remove two nuts (21) from two elbows (22).

10. **Remove two transfer valves (6) from bracket (23).**

    a. Hold two screws (24). Remove two nuts (25) and washers (26).

    b. Remove two screws (24).

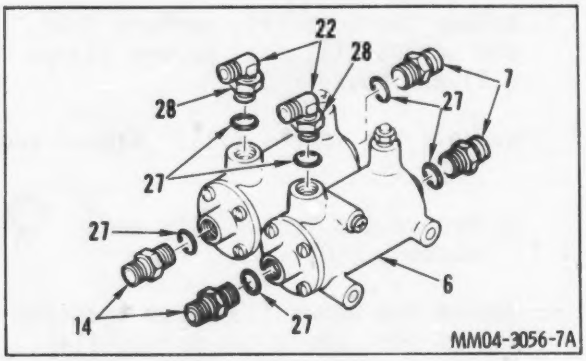
11. **If replacing transfer valves (6), remove unions (7) and (14) and elbows (22).**

    a. Remove two unions (7) and two unions (14).

    b. Remove and discard four packings (27).

    c. Loosen two nuts (28). Remove two elbows (22).

    d. Remove and discard two packings (27).



B. CLEANING

Wipe all removed and attaching parts with a clean rag.

C. INSPECTION

1. **Check all removed and attaching parts for corrosion** (para 1-5-38).

2. **Check all removed and attaching parts and surfaces for cracks and scratches.** None allowed.

GO TO NEXT PAGE

3-4-3. TRANSFER VALVES REMOVAL/INSTALLATION (cont) 3-4-3

D. INSTALLATION

1. Lubricate all fittings, tubes, hose nuts, and packings before installation. Use hydraulic fluid (E13).

2. If fittings are not installed on transfer valves, start with step 3. If fittings are installed, start with step 4.

3. Install union (7), union (14), and elbow (22) on each transfer valve (6).

   a. Install six new packings (27) on two unions (7), two unions (14), and two elbows (22).

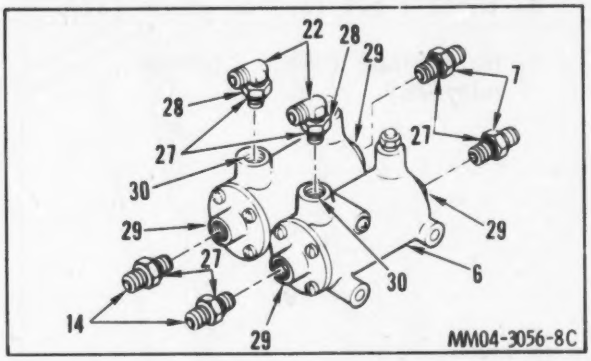
   b. Install unions (7) and (14) in ports (29).

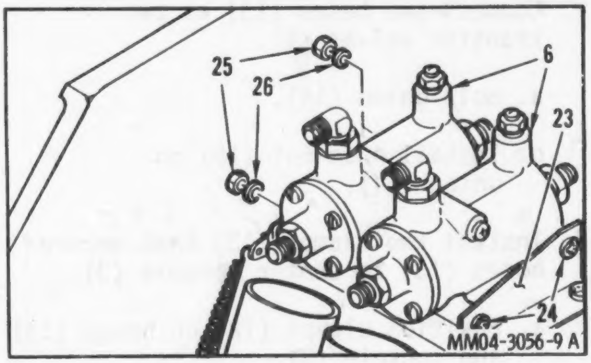
   c. Install two elbows (22) in ports (30). Do not tighten nuts (28).

4. Install two transfer valves (6) on bracket (23).

   a. Position two valves (6) on bracket (23). Install two screws (24) through bracket (23), and two valves (6).

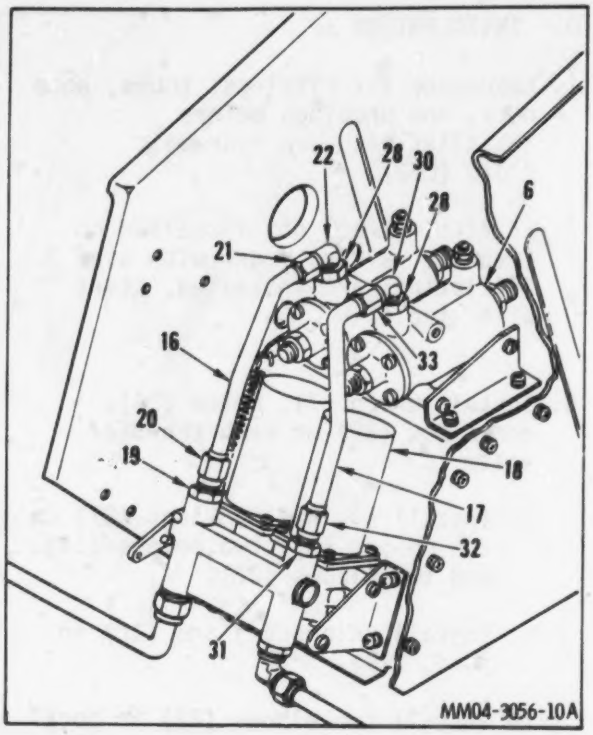
   b. Hold two screws (24). Install two washers (26) and nuts (25).



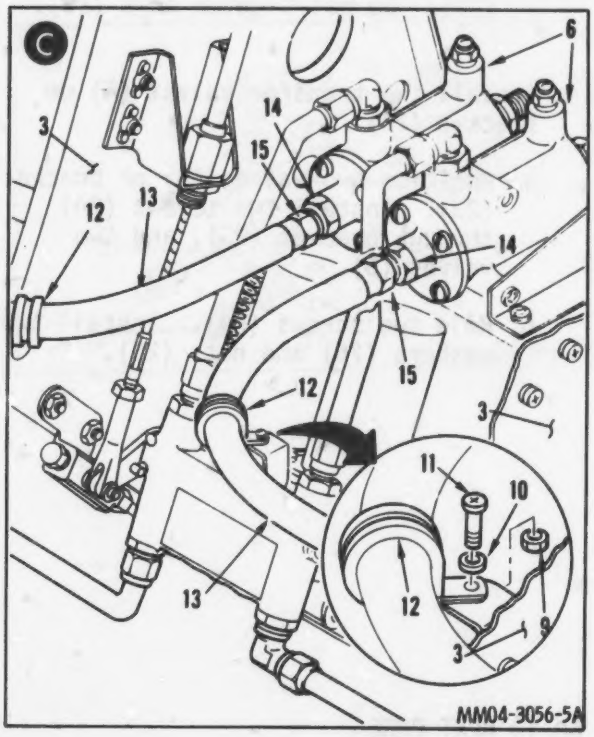


GO TO NEXT PAGE

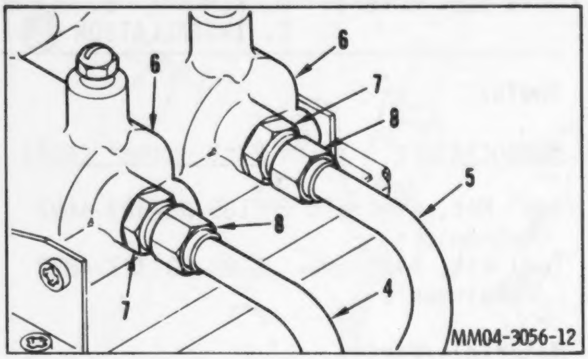
3-4-3. TRANSFER VALVES REMOVAL/INSTALLATION (cont) 3-4-3

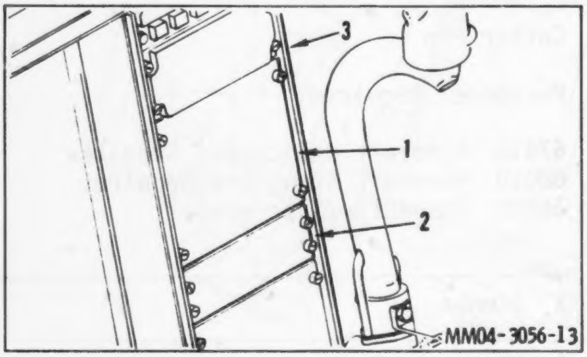


5. **Install tube (16).**
   a. Install nut (21) on elbow (22).
   b. Install nut (20) on union (19).
   c. Hold elbow (22). Tighten nut (28).
6. **Install tube (17).**
   a. Install nut (33) on elbow (30).
   b. Install nut (32) on union (31).
   c. Hold elbow (30). Tighten nut (28).
7. **Connect two hoses (13) to two transfer valves (6).**
   a. Hold union (14).
   b. Install hose nut (15) on union (14).
8. **Install two clamps (12) that secure hoses (13) to center console (3).**
   a. Position clamps (12) on hoses (13) and console (3).
   b. Install screw (11), through washer (10), clamp (12), and console (3).
   c. Install nut (9) on screw (11).



GO TO NEXT PAGE





9. **Enter pilot station (para 1-7-1). Observe all safety precautions.**

10. **Connect tubes (4) and (5) to two unions (7) on transfer valve (6).**

    a. Hold unions (7).

    b. Install tube nuts (8) on unions (7).

11. **Bleed brake system** (para 1-5-34).

12. **Inspect (TI).**

13. **Install panels (1) and (2) on center console (3).**

14. **Secure CPG seat (para 2-3-12). Set** No. 2 engine power lever to LOCKOUT.

15. **Perform main landing gear operational check** (TM 55-1520-238-T).

END OF TASK

3-4-4. PARKING BRAKE CABLE AND CONTROL SUPPORT LOWER BRACKET REMOVAL/INSTALLATION

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. REPAIR E. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Tool Kit, Airframe Repairman's	5180-00-323-4876

Materials/Parts:

Cotter Pin

Personnel Required:

67R10	Aircraft Helicopter Repairer
68G10	Aircraft Structure Repairer
66R30	Inspector/Supervisor

References:

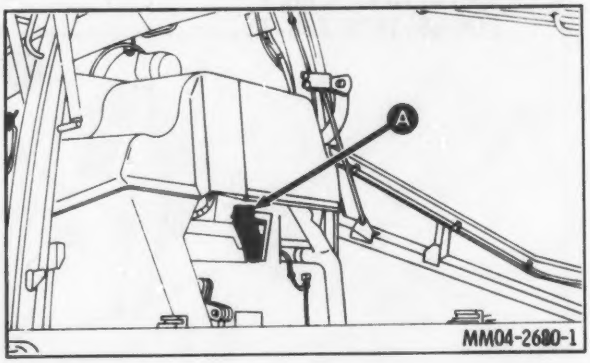
TM 55-1500-204-25/1

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-12	CPG seat tilted forward
4-1-6	No. 2 engine power lever moved to LOCKOUT

A. REMOVAL

1. Place wheel chocks.
2. Enter pilot station (para 1-7-1). Observe all safety precautions.
3. Release parking brakes (para 1-7-6).
4. Enter CPG station (para 1-7-1). Observe all safety precautions.



GO TO NEXT PAGE

3-4-4. PARKING BRAKE CABLE AND CONTROL SUPPORT LOWER BRACKET REMOVAL/INSTALLATION (cont) 3-4-4

5. **Loosen check nut (1).**

6. **Remove and discard cotter pin (2).**

7. **Remove clevis pin (3) and two washers (4).**

8. **Remove clevis (5) and check nut (1) from cable (6).**

9. **Remove four screws (7) and washers (8).**

10. **Remove parking brake control support lower bracket (9).**

    a. Hold cable (6) at hex swage. Remove locknut (10).

    b. Slide cable (6) from bracket (9).

11. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**

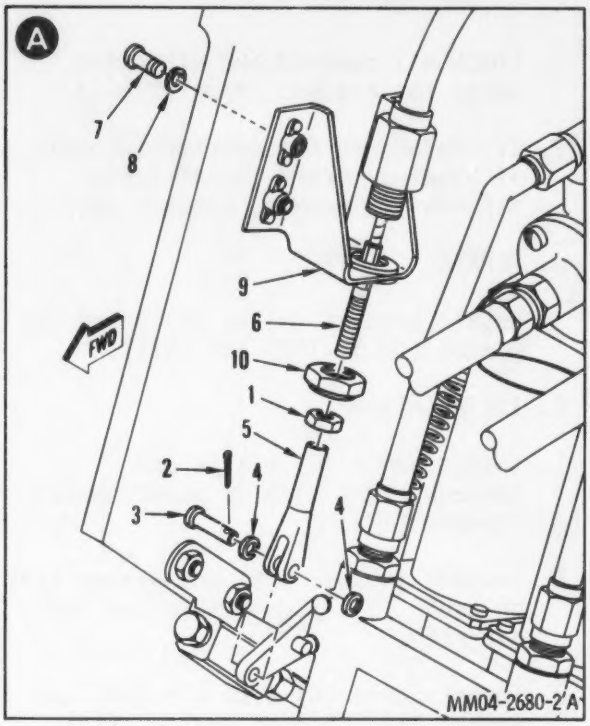
12. **Remove handle (11).**

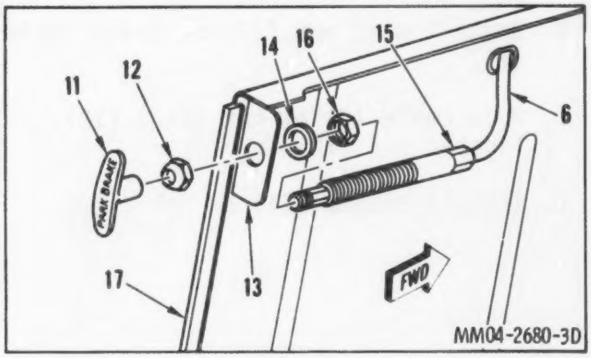
13. **Remove seal nut (12).** Turn counterclockwise and pull.

14. **Remove cable (6) from mounting bracket (13).**

15. **Remove jam nut (17) and washer (14).** Hold cable (6) at hex swage (15). Remove nut (16) and washer (14).

16. **Remove cable (6) from center console panel (17).**





B. CLEANING

Wipe all removed and attaching parts with a clean rag.

GO TO NEXT PAGE

3-4-4. PARKING BRAKE CABLE AND CONTROL SUPPORT LOWER BRACKET REMOVAL/INSTALLATION (cont) 3-4-4

C. INSPECTION

1. Check all removed and attaching parts for cracks. None allowed.

2. If cable does not operate smoothly, if binding occurs, or if cable strands are broken, replace cable.

D. REPAIR

Repair bracket (9) by replacing nut plates (TM 55-1500-284-25/1).

E. INSTALLATION

1. Insert cable (6) clevis end through right side of panel center console (17).

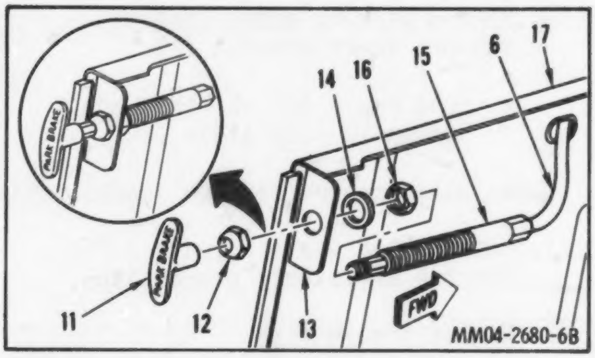
2. Install jam nut (16) and washer (14) on cable (6). Do not tighten jam nut (16).

3. Insert cable (6) with nut (16) and washer (14) through bracket (13).

4. Install seal nut (12) on brake cable (6).

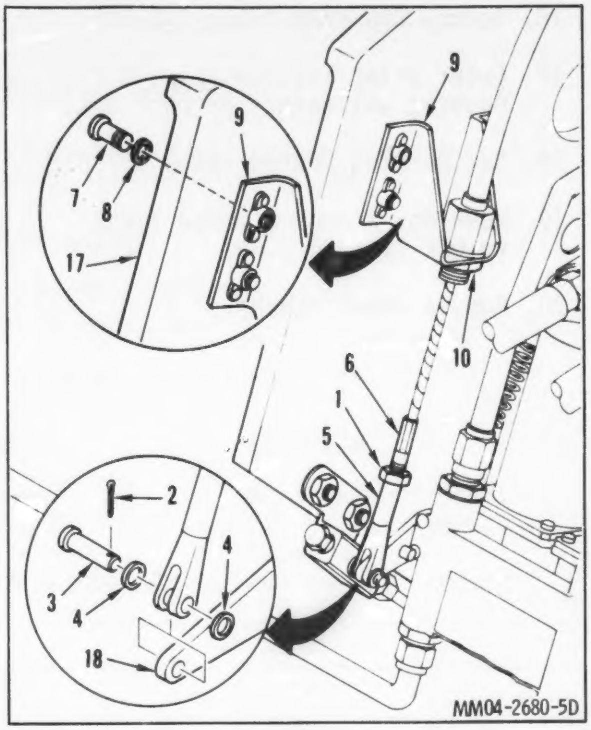
5. Hold cable (6) at hex swage (15). Tighten nut (12).

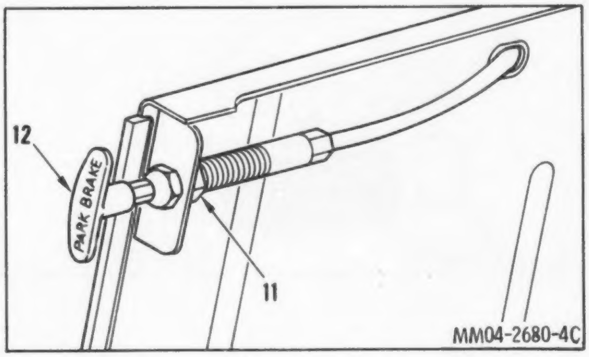
6. Install handle (11) on cable (6).



GO TO NEXT PAGE

3-4-4. PARKING BRAKE CABLE AND CONTROL SUPPORT LOWER BRACKET REMOVAL/INSTALLATION (cont) 3-4-4





7. **Enter CPG station (para 1-7-1). Observe all safety precautions.**

8. **Install bracket (9) on cable (6).**

   a. Insert cable (6) clevis end through hole in bracket (9). Install locknut (10).

   b. Hold cable (6) at hex swage. Tighten locknut (10).

9. **Install four screws (7) through four washers (8) and center console panel (17) into bracket (9).**

10. **Install nut (1) and clevis (5) on cable (6).**

11. **Adjust clevis (5) and nut (1).**

   NOTE

   Lever (18) must be in full down position.

   a. Remove slack from cable (6).

   b. Aline clevis (5) holes with lever (18) hole. Tighten nut (1).

12. **Insert pin (3) through washer (4), clevis (5), lever (18), and washer (4).**

13. **Install new cotter pin (2) in pin (3).**

14. **Tighten nut (11).** Hold handle (12) in vertical position. Tighten jam nut (11).

15. **Inspect (TI).**

GO TO NEXT PAGE

3-4-4. PARKING BRAKE CABLE AND CONTROL SUPPORT LOWER BRACKET REMOVAL/INSTALLATION (cont)

16. Secure CPG seat (para 2-3-12).

17. Enter pilot station (para 1-7-1). Observe all safety precautions.

18. Set parking brakes (para 1-7-6).

19. Move No. 2 engine power lever to OFF (para 4-1-6).

20. Remove wheel chocks.

END OF TASK

3-4-5. PILOT BRAKE MASTER CYLINDER REMOVAL/INSTALLATION 3-4-5

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

	Packing (2)
	Cotter Pin (4)
(E8)	Lockwire
(E13)	Hydraulic Fluid

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 9-1090-208-23
TM 55-1520-238-T

Equipment Conditions:

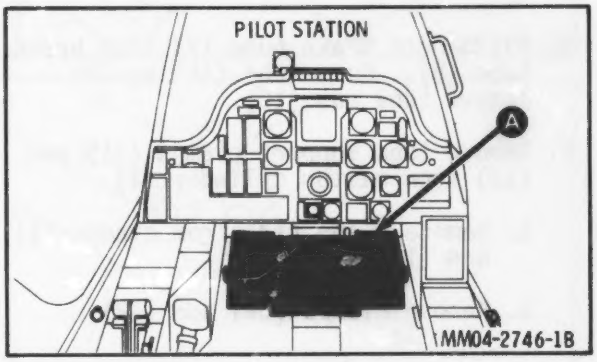
Ref	Condition
1-7-2	Helicopter safed
2-3-12	CPG seat tilted forward
TM 9-1090-208-23	Gun turret removed

NOTE

This task is typical for left and right master cylinders.

A. REMOVAL

1. Place wheel chocks.
2. Enter pilot's station (para 1-7-1). Observe all safety precautions.
3. Release parking brakes (para 1-7-6).



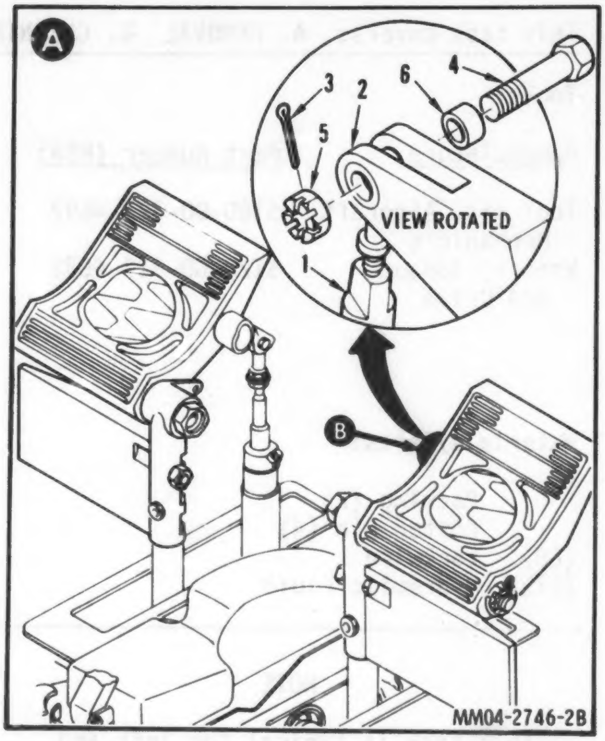
GO TO NEXT PAGE

3-4-5. PILOT BRAKE MASTER CYLINDER REMOVAL/INSTALLATION (cont) 3-4-5

NOTE

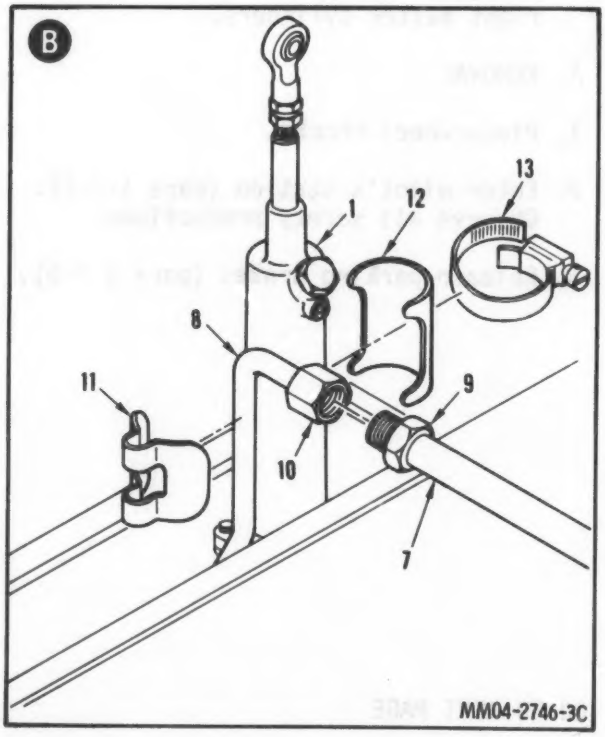
Directional control pedals are shown with protective covers removed.

4. **Disconnect master cylinder (1) from directional control pedal (2).**
   a. Remove and discard cotter pin (3).
   b. Hold bolt (4). Remove nut (5).
   c. Remove bolt (4) and bushing (6).



MM04-2746-2B

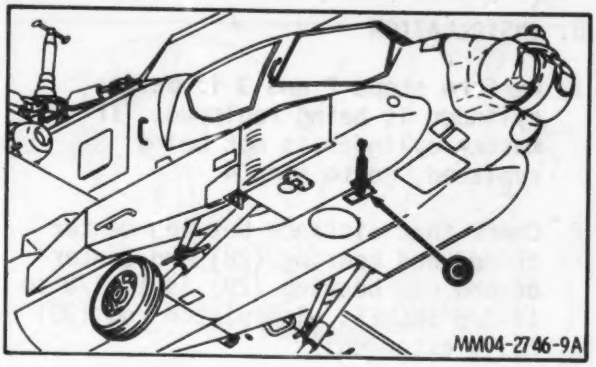
5. **Disconnect brake hose (7) from brake tube (8).** Hold tube fitting (9). Remove tube nut (10).
6. **Remove tube support clamps (11) and (12) from master cylinder (1).**
   a. Remove clamp (13) from clamps (11) and (12).
   b. Remove clamps (11) and (12).

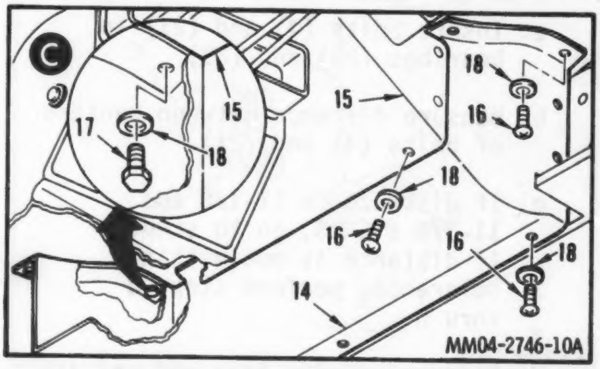


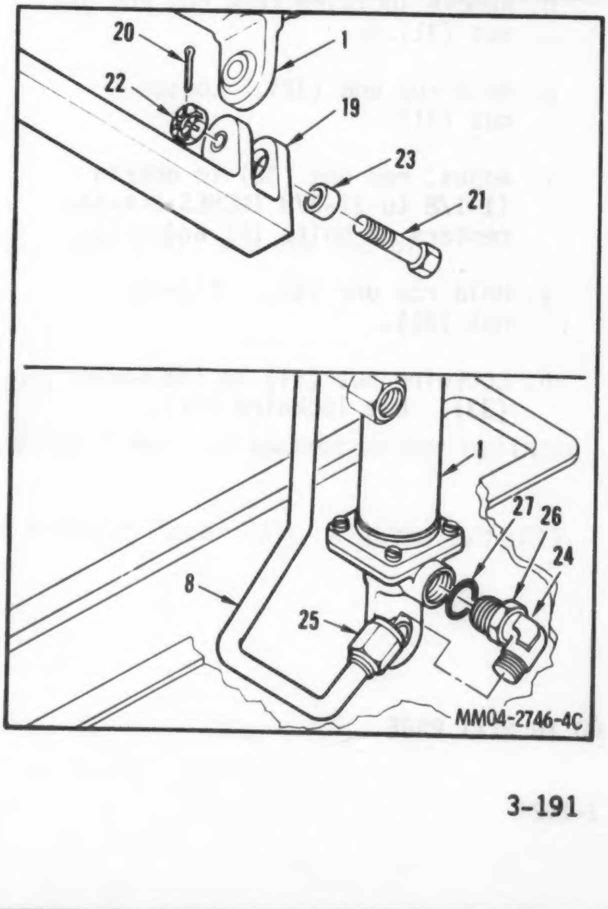
MM04-2746-3C

GO TO NEXT PAGE

3-4-5. PILOT BRAKE MASTER CYLINDER REMOVAL/INSTALLATION (cont) 3-4-5







NOTE

Perform steps 8, 9, and 10 from gun turret compartment.

7. **Remove debris covers (14) and (15).**
   a. Remove 23 screws (16), one bolt (17), and 24 washers (18).
   b. Remove debris covers (14) and (15).
8. **Disconnect master cylinder (1) from housing (19).**
   a. Remove and discard cotter pin (20).
   b. Hold bolt (21). Remove nut (22).
   c. Remove bolt (21) and bushing (23).
   d. Remove cylinder (1).
9. **Disconnect brake tube (8) from elbow (24).** Remove tube nut (25) from elbow (24).
10. **If master cylinder (1) is to be replaced, remove elbow (24).**
    a. Loosen jam nut (26). Remove elbow (24).
    b. Remove and discard packing (27).

B. CLEANING

Wipe all removed and attaching parts with a clean rag.

C. INSPECTION

Check all removed and attaching parts for cracks. None allowed.

GO TO NEXT PAGE

3-4-5. PILOT BRAKE MASTER CYLINDER REMOVAL/INSTALLATION (cont) 3-4-5

D. INSTALLATION

1. Perform steps 2 and 3 if master cylinder is being replaced. If master cylinder is not being replaced, go to step 4

2. Check that distance between center of rod-end bearing (28) and center of end cap bearing (29) is 11-1/8 to 11-3/8 INCHES, with piston rod (30) fully extended.

   a. Insert bolts (4) and (21) in bearings (28) and (29).

   b. Measure distance between centers of bolts (4) and (21).

   c. If distance is 11-1/8 and 11-3/8 INCHES, go to step 4. If distance is not within tolerance, perform steps d thru h.

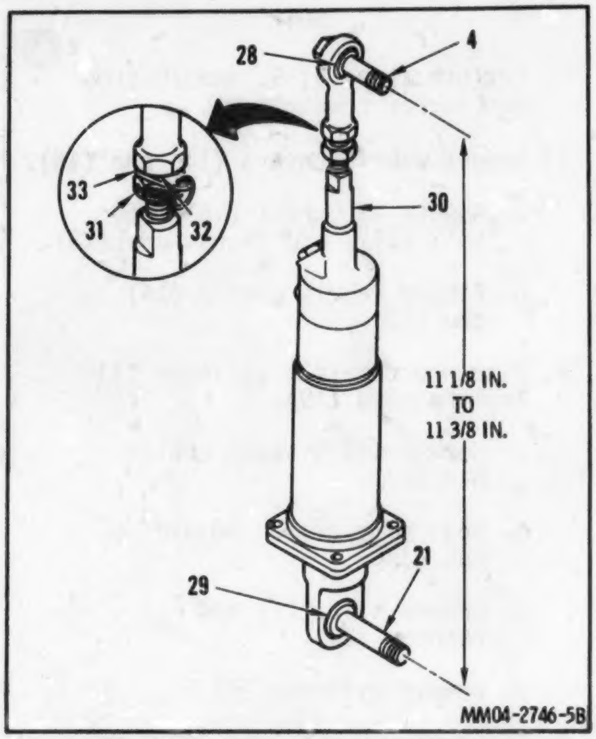
   d. Remove lockwire from rod end jam nut (31).

   e. Hold rod end (32). Loosen nut (31).

   f. Adjust rod end (32) to obtain 11-1/8 to 11-3/8 INCHES between centers of bolts (4) and (21).

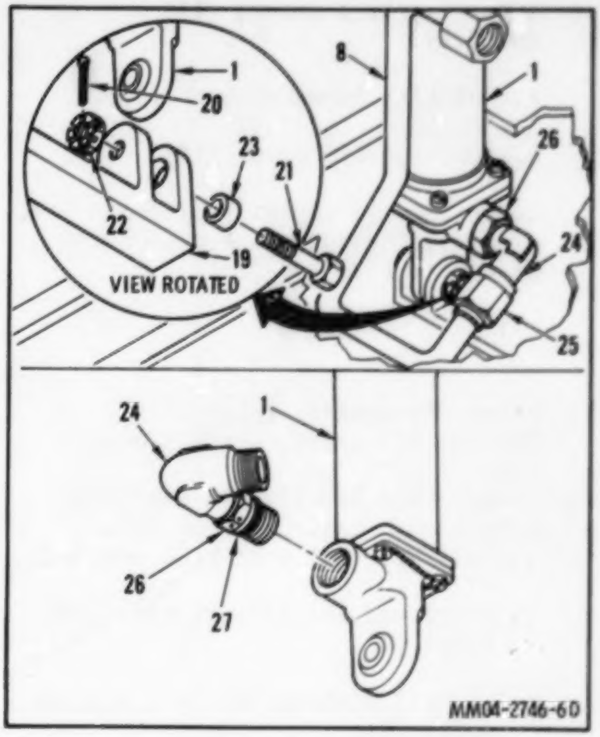
   g. Hold rod end (32). Tighten nut (31).

   h. Lockwire nut (31) to tab washer (33). Use lockwire (E8).



GO TO NEXT PAGE

3-4-5. PILOT BRAKE MASTER CYLINDER REMOVAL/INSTALLATION (cont) 3-4-5



3. **Install elbow (24) in port of master cylinder (1).**

   a. Lubricate new packing (27). Use hydraulic fluid (E13).

   b. Install packing (27) on elbow (24).

   c. Install elbow (24) in port of cylinder (1).

NOTE

- Do not tighten jam nut (26).
- Do steps 4, 5, and 6 from gun turret compartment.

4. **Install master cylinder (1) with elbow (24) facing outboard for left cylinder; inboard for right cylinder.** Install bolt (21) with head inboard.

   a. Insert cylinder (1) through opening in pilot floor.

   b. Place cylinder (1) between lugs (19).

   c. Install bushing (23) in lugs (19).

   d. Install bolt (21) through bushing (23), lugs (19), and end cap of cylinder (1).

   e. Hold bolt (21). Install nut (22).

   f. Install new cotter pin (20) in bolt (21).

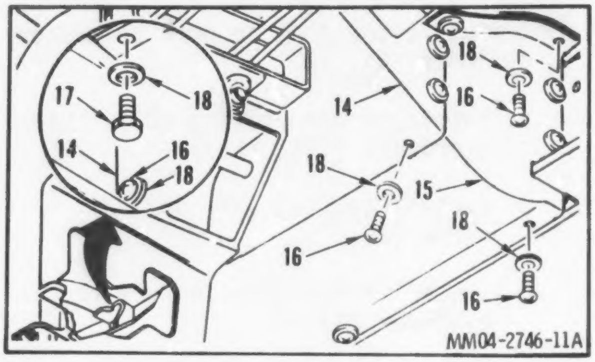
5. **Place brake tube (8) through opening in pilot floor and against master cylinder (1). Connect nut (25) to elbow (24).**

   a. Hold elbow (24) with tube (8) against brake cylinder (1). Tighten nut (25).

   b. Tighten nut (26).

GO TO NEXT PAGE

3-4-5. PILOT BRAKE MASTER CYLINDER REMOVAL/INSTALLATION (cont) 3-4-5

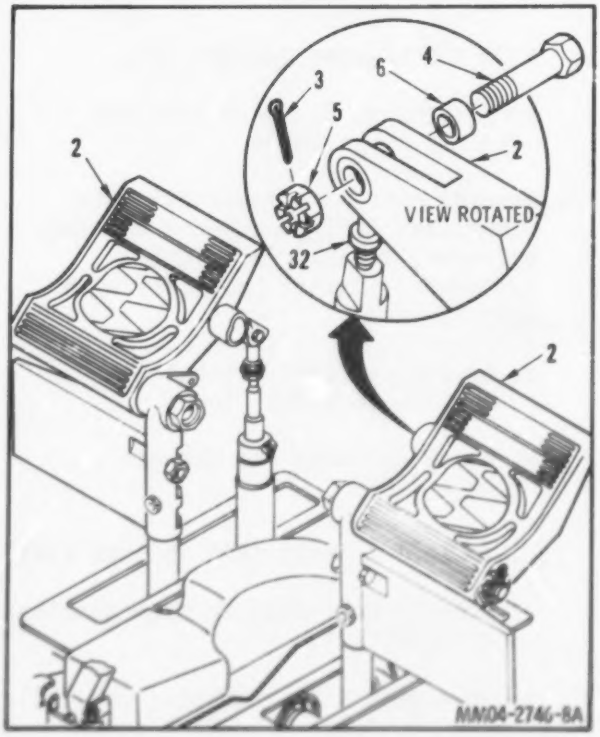


6. Install debris covers (14) and (15).

a. Position forward cover (15).

b. Position aft cover (14).

c. Install 23 screws (16) and 1 bolt (17), through washers (18) and covers (14) and (15).



7. Enter CPG station (para 1-7-1). Observe all safety precautions.

8. Install rod end (32) in clevis of directional control pedal (2). Install bolt (4) with head inboard.

a. Place rod end (32) in clevis of pedal (2).

b. Install bushing (6) in clevis of pedal (2).

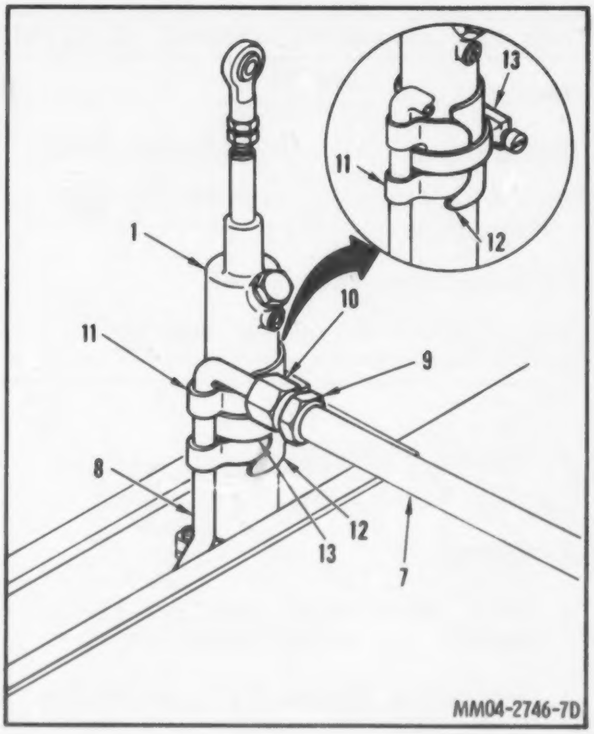
c. Install bolt (4) with head inboard.

d. Hold bolt (4). Install nut (5).

e. Install new cotter pin (3) in bolt (4).

GO TO NEXT PAGE

3-4-5. PILOT BRAKE MASTER CYLINDER REMOVAL/INSTALLATION (cont) 3-4-5



10. **Install tube support clamps (11) and (12).** Torque screw of clamp (13) to 7 **INCH-POUNDS.**

    a. Position support clamp (11) and (12) on master cylinder (1) and brake tube (8).

    b. Install clamp (13). Torque screw to 7 **INCH-POUNDS.** Use screwdriver bit.

11. **Connect brake hose (7) to brake tube (8).** Hold tube fitting (9). Install tube nut (10).

12. **Bleed brake system** (para 1-5-34).

13. **Inspect (TI).**

14. **Secure CPG seat** (para 2-3-12).

15. **Install gun turret** (TM 9-1090-208-23).

16. **Perform main landing gear operational check** (TM 55-1520-238-T).

END OF TASK

3-4-6. PILOT BRAKE HOSE REMOVAL/INSTALLATION 3-4-6

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-3-12	CPG seat tilted forward

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

NOTE

This task is typical for left and right brake hoses.

A. REMOVAL

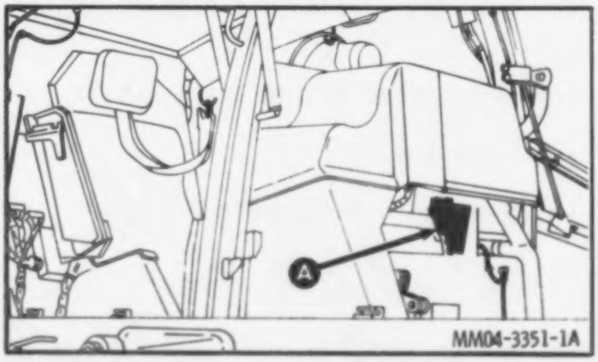
1. Enter CPG station (para 1-7-1). Observe all safety precautions.

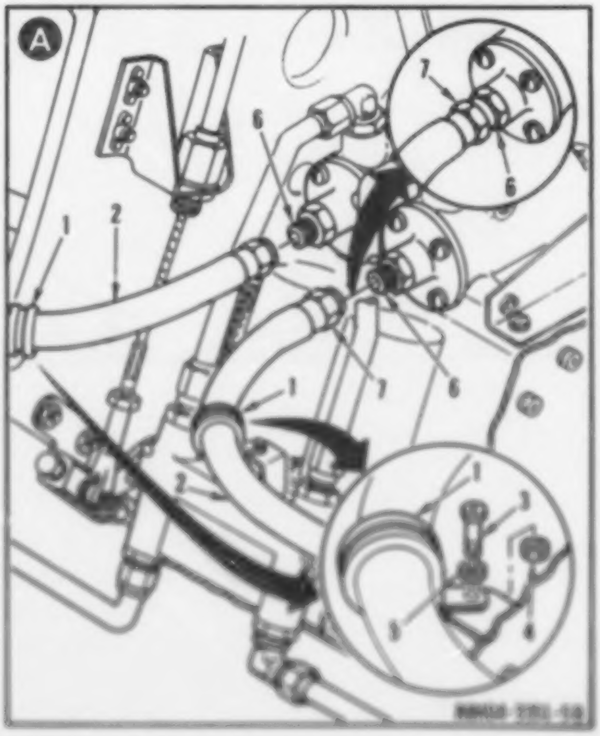
2. Remove two clamps (1) securing two hoses (2).

   a. Hold two screws (3) and remove two nuts (4).

   b. Remove two screws (3) and washers (5).

3. Remove two hoses (2) from two unions (6). Hold unions (6) and remove two nuts (7).





3-4-6. PILOT BRAKE HOSE REMOVAL/INSTALLATION (cont) 3-4-6

4. **Enter pilot station (para 1-7-1).** Observe all safety precautions.

5. **Disconnect hose (2) from nut (8).**

   a. Hold tube fitting (9). Remove nut (8).

   b. Remove hose (2).

B. **CLEANING**

Wipe all removed and attaching parts with a clean rag.

C. **INSPECTION**

Check hose fittings for stripped threads. None allowed.

D. **INSTALLATION**

1. **Install tube fitting (9) on nut (8).** Hold tube fitting (9) and install nut (8).

2. **Install hose (2) on union (6).** Hold union (6) and install nut (7).

3. **Install clamp (1) on bracket (10).**

   a. Aline clamp (1) with bracket (10).

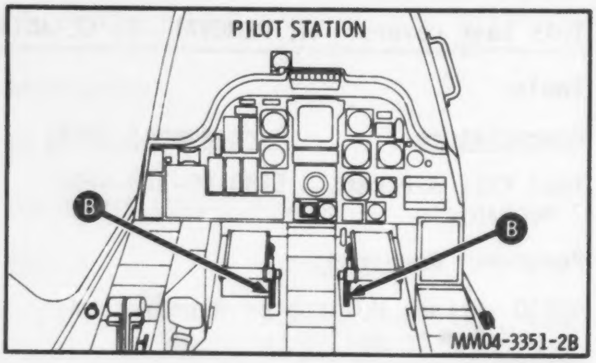
   b. Install screw (3) through washer (5), clamp (1), and bracket (10).

   c. Install nut (4). Hold screw (3) and tighten nut (4).

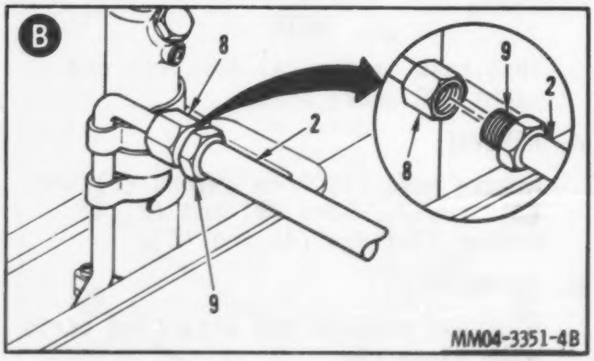
4. **Bleed brake system (para 1-5-8).**

5. **Inspect (TI).**

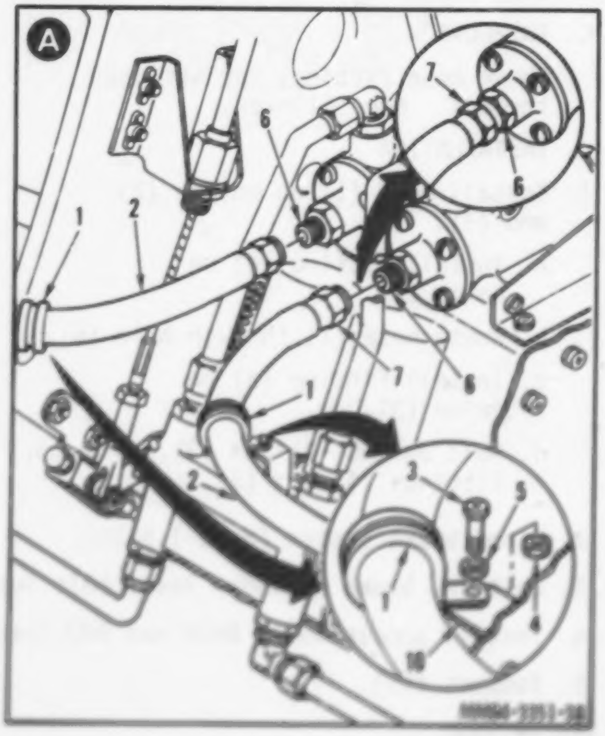
END OF TASK



MM04-3351-2B



MM04-3351-4B



MM04-3351-3B

3-4-7. COPILOT/GUNNER BRAKE HOSE REMOVAL/INSTALLATION 3-4-7

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10	Attack Helicopter Repairer (2) One to assist

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors B41R and B60 removed
3-4-8	Left CPG brake cylinder - lower bolt removed

NOTE

This task is typical for left and right CPG brake hoses.

A. REMOVAL

Remove hose (1) from unions (2) and (3). Hold unions (2) and (3). Remove fittings (4) and (5).

B. CLEANING

Wipe all removed and attaching parts with clean rag.

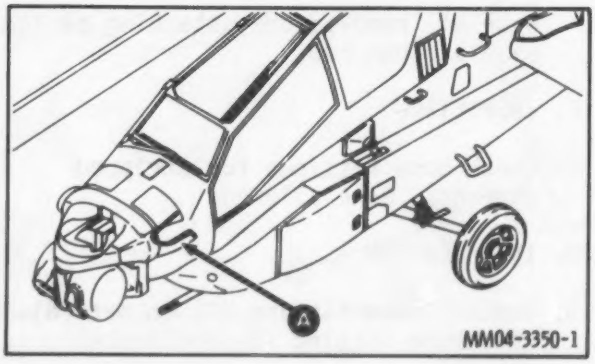
C. INSPECTION

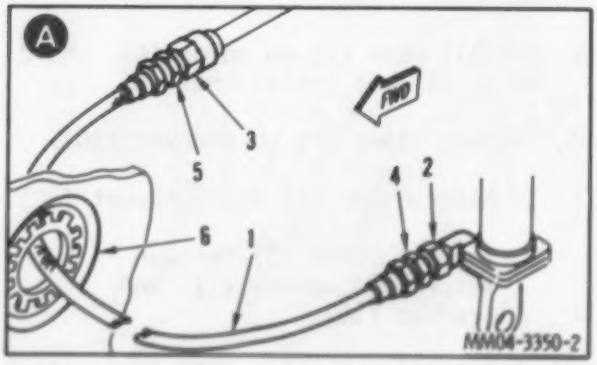
Check hose fittings for stripped threads. None allowed.

D. INSTALLATION

1. Install hose (1) on unions (2) and (3).
   a. Install fitting (4) on union (2).
   b. Route hose (1) through hole (6).
   c. Install fitting (5) on union (3).
   d. Hold unions (2) and (3). Tighten fittings (4) and (5).
2. Bleed brake system (para 1-5-34).
3. Left CPG brake cylinder lower bolt installed (para 3-4-8).
4. Install access doors B41R and B60 (para 2-2-2).
5. Inspect (TI).

END OF TASK





3-4-8. COPILOT/GUNNER BRAKE MASTER CYLINDERS REMOVAL 3-4-8

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer

References:

TM 9-1270-476-20

Equipment Conditions:

Ref	Condition
2-2-2	Access doors L60, R60, B65L, and B65R opened
TM 9-1270-476-20	Indirect view display (IVD) removed

A. REMOVAL

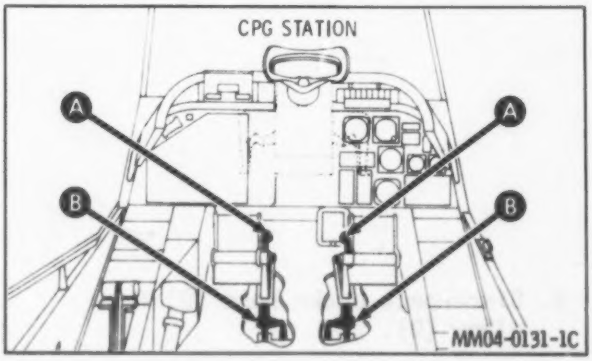
NOTE

This task is typical for left and/or right master cylinders.

1. **Place wheel chocks.**

2. **Enter CPG station** (para 1-7-1). **Observe all safety precautions.**

3. **Release parking brakes** (para 1-7-6).



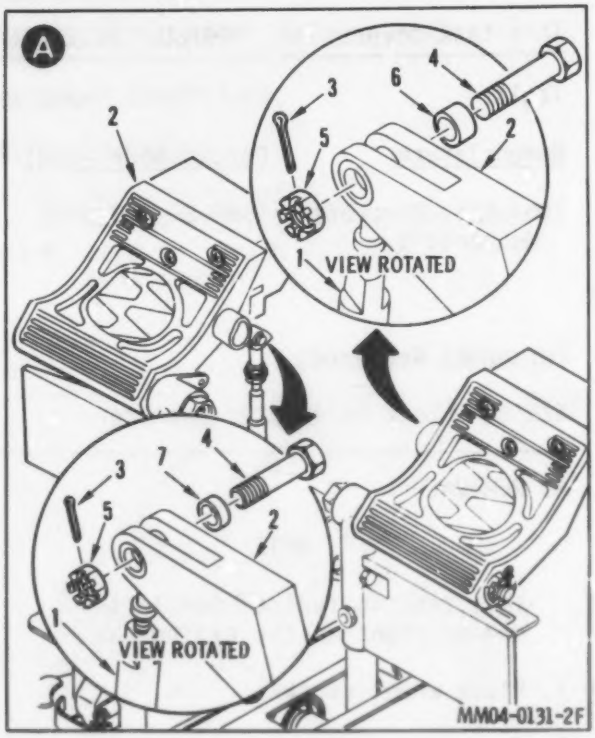
GO TO NEXT PAGE

3-4-8. COPILOT/GUNNER BRAKE MASTER CYLINDERS REMOVAL (cont) 3-4-8

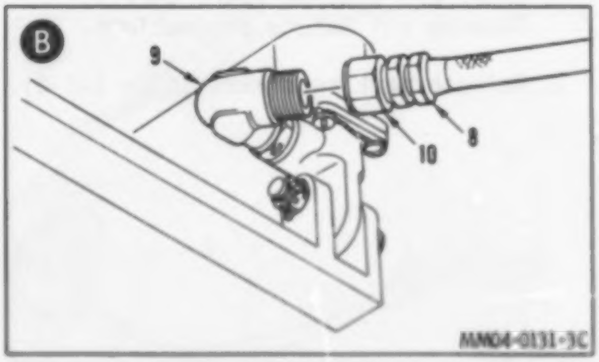
NOTE

Directional control pedals are shown with protective covers removed.

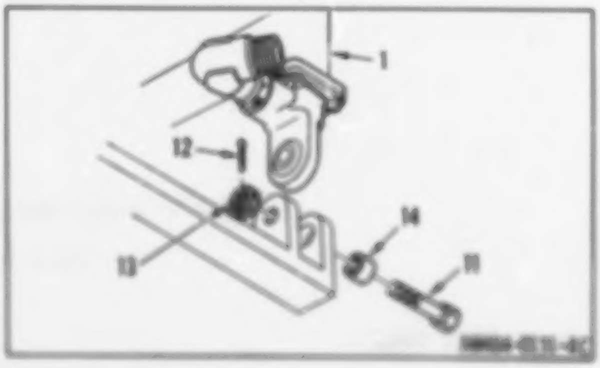
4. **Disconnect master cylinder (1) from directional control pedal (2).**
   a. Remove and discard cotter pin (3).
   b. Hold bolt (4). Remove nut (5).
   c. Remove bolt (4) and bushing (6) (bushing (7) left brake only).



5. **Disconnect brake hose (8) from elbow (9).**
   a. Remove hose nut (10) from elbow (9).
   b. Use container to catch hydraulic fluid spills.

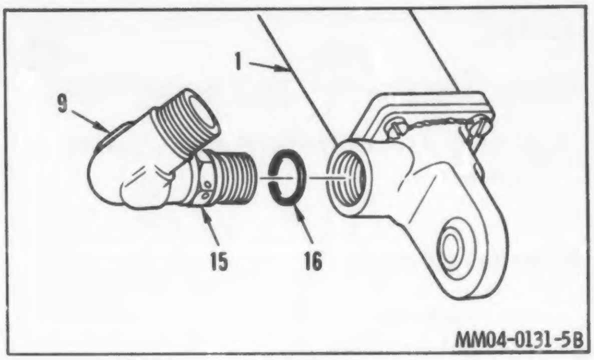


6. **Remove bolt (11) and master cylinder (1).**
   a. Remove and discard cotter pin (12).
   b. Hold bolt (11). Remove nut (13).
   c. Remove bolt (11), bushing (14), and cylinder (1) through access door 86O.



GO TO NEXT PAGE

3-4-8. COPILOT/GUNNER BRAKE MASTER CYLINDERS REMOVAL (cont) 3-4-8



5. Do step 6 if master cylinder is to be replaced.

6. Remove elbow (9) from master cylinder (1).

   a. Remove lockwire from nut (15).

   b. Loosen nut (15) on elbow (9). Remove elbow (9).

   c. Remove and discard packing (16).

B. CLEANING

Wipe all removed and attaching parts with a clean rag.

C. INSPECTION

1. Check all removed and attaching parts for cracks. None allowed.

2. Check master cylinder bearings for play. Maximum radial and axial bearing play 0.002-inch.

3. Check master cylinder for cracks, nicks, and dents. None allowed.

4. Check master cylinder for leaks. None allowed. Slight wetting of cylinder and seals insufficient to form a drop is normal.

END OF TASK

3-4-9. COPILOT/GUNNER BRAKE MASTER CYLINDERS INSTALLATION 3-4-9

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

	Packing
	Cotter Pin
(E8)	Lockwire
(E13)	Hydraulic Fluid

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

NOTE

This task is typical for left and right master cylinders.

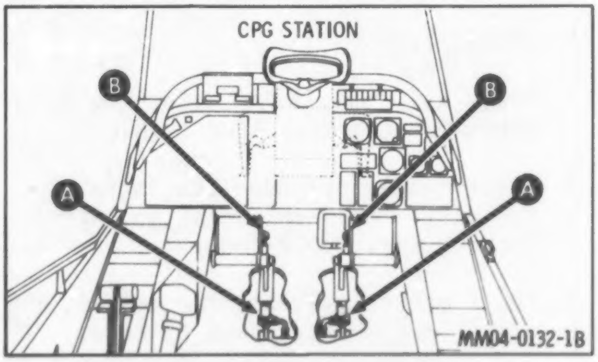
1. **If master cylinder is being replaced, perform steps 2 thru 6. If master cylinder is not being replaced, go to step 7.**

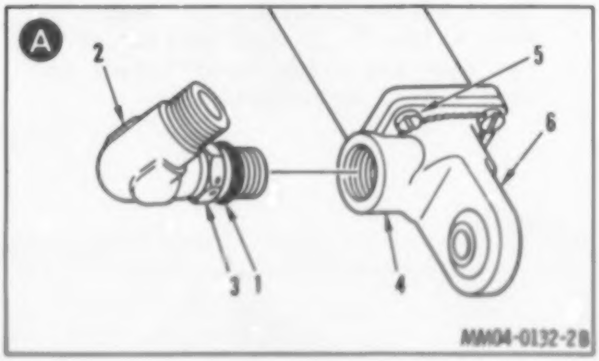
2. **Lubricate new packing (1) and elbow (2).** Use hydraulic fluid (E13).

3. **Install nut (3) and packing (1) on elbow (2).**

4. **Install elbow (2) in port of cylinder end cap (4).** Position elbow so outlet points forward when cylinder is installed. Tighten nut (3).

5. **Lockwire nut (3) to screw (5) in cylinder end cap (6).** Use lockwire (E8).





GO TO NEXT PAGE

3-4-9. COPILOT/GUNNER BRAKE MASTER CYLINDERS INSTALLATION (cont) 3-4-9

6. Check that distance between center of rod end bearing (7) and center of end cap bearing (8) is 11-1/16 TO 11-7/16 INCHES with piston rod (9) fully extended.

a. Insert 1/4-inch bolts (10) in bearings (7) and (8). Use bolts removed during brake cylinder removal (para 3-4-8).

b. Measure distance between centers of bolts (10).

c. If distance is **11-1/16 TO 11-7/16 INCHES**, go to step 7. If distance is not in tolerance, perform substeps d thru h.

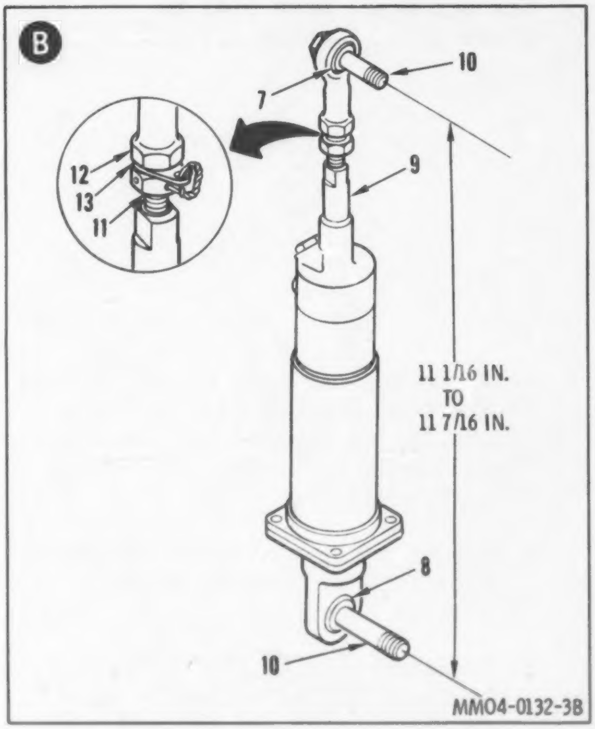
d. Remove lockwire from rod end nut (11).

e. Hold piston rod end (12). Loosen nut (11).

f. Adjust rod end (12) to obtain **11-1/15 TO 11-7/16 INCHES** between centers of bolts (10).

g. Hold rod end (12). Tighten nut (11).

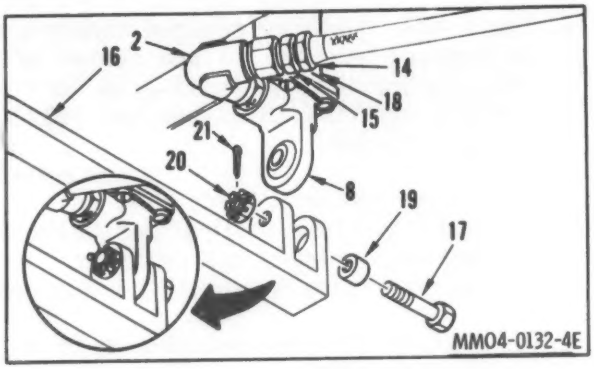
h. Lockwire jam nut (11) to tab washer (13). Use lockwire (E8).



GO TO NEXT PAGE

3-4-9. COPILOT/GUNNER BRAKE MASTER CYLINDERS INSTALLATION (cont) 3-4-9

7. **Connect brake hose (14) to elbow (2).** Tighten nut (15).



8. **Position end cap bearing (8) in lugs of mounting bracket (16) so elbow (2) is facing inboard and forward.** Install bolt (17) with head facing inboard.

    a. Insert rod end of brake cylinder (18) through opening in CPG station floor.

    b. Position bearing (8) in lugs of bracket (16) so elbow (2) is facing inboard and forward.

    c. Install bushing (19) in bracket (16).

    d. Install bolt (17) through bracket (16), bearing (8), and bushing (19). Install bolt (17) with head facing inboard.

    e. Hold bolt (17). Install nut (20).

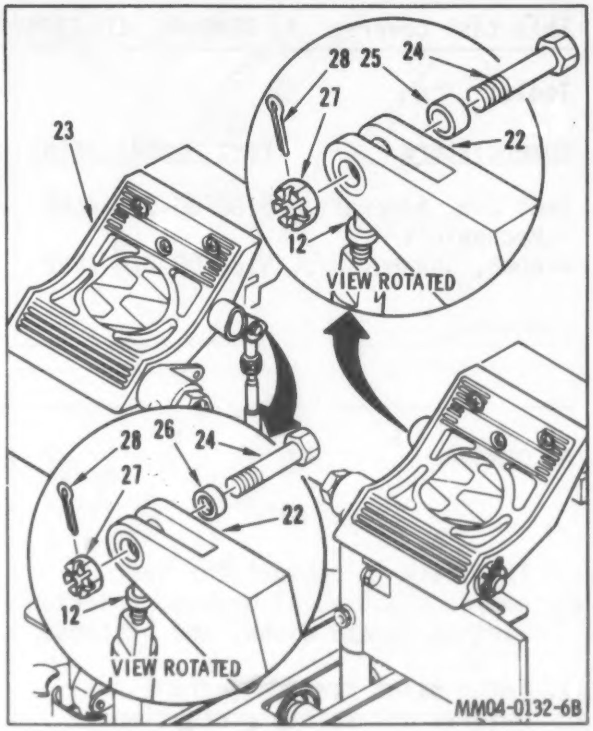
    f. Install new cotter pin (21) in bolt (17).

9. **Enter CPG station (para 1-71). Observe all safety precautins.**

GO TO NEXT PAGE

3-4-9. COPILOT/GUNNER BRAKE MASTER CYLINDERS INSTALLATION (cont) 3-4-9

10. **Position rod end (12) in clevis (22) of directional control pedal (23).** Install bolt (24) with head facing inboard.
    - a. Position rod end (12) in clevis (22) of control pedal (23).
    - b. Install bushing (25) (bushing (26) left pedal) in clevis (22).
    - c. Install bolt (24) through clevis (22), rod end (12), and bushing (25) (bushing (26) left pedal). Install bolt (24) with head facing inboard.
    - d. Hold bolt (24). Install nut (27).
    - e. Install new cotter pin (28) in bolt (24).
11. **Bleed brake system** (para 1-5-34).
12. **Install access doors L60, R60, B65L, and B65R** (para 2-2-2).
13. **Inspect** (TI).
14. **Perform main landing gear operational check** (TM 55-1520-238-T).



END OF TASK

3-4-10. WHEEL BRAKE, FRICTION LINING, BRAKE DISK, AND PISTON REMOVAL 3-4-10

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Spanner	5120-00-215-1882

Personnel Required:

67R10 Attack Helicopter Repairer

Equipment Conditions:

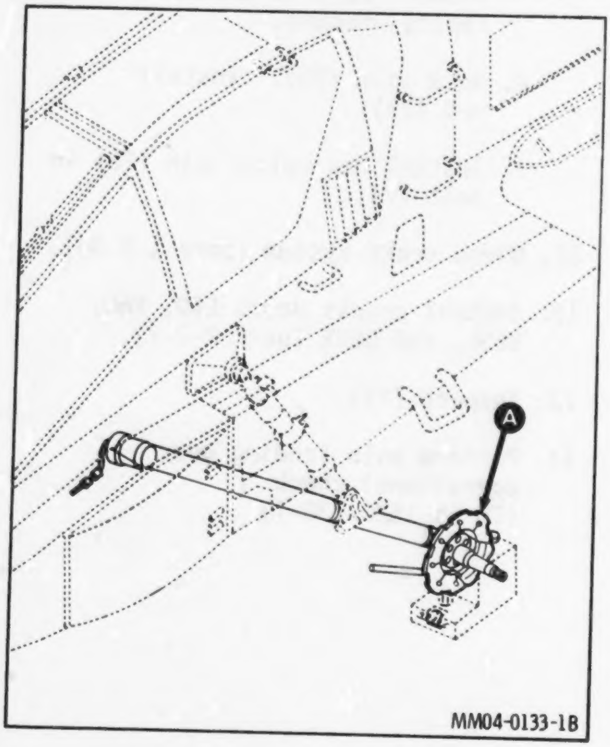
Ref	Condition
1-7-2	Helicopter safed
3-2-6	Wheel and tire removed

A. REMOVAL

NOTE

This task is typical for left and/or right wheel brakes, friction linings, brake disks, and pistons.

1. **Enter pilot station (para 1-7-1). Observe all safety precautions.**
2. **Release parking brakes (para 1-7-6).**

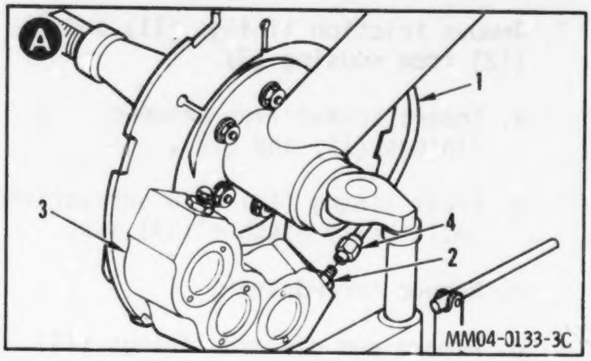


MM04-0133-1B

GO TO NEXT PAGE

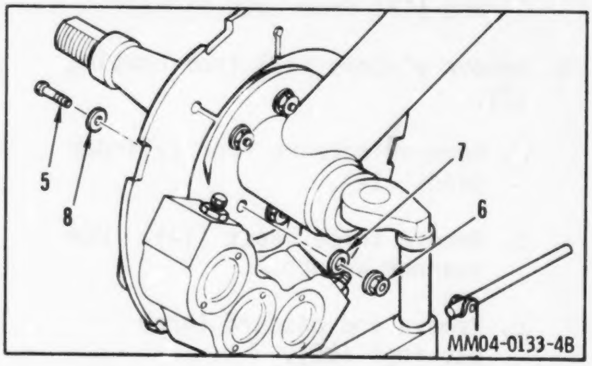
3-4-10. WHEEL BRAKE, FRICTION LINING, BRAKE DISK AND PISTON REMOVAL (cont) 3-4-10

3. **Disconnect brake tube (1) from union (2) on housing (3).** Hold union (2). Remove tube nut (4). Use container to catch hydraulic fluid spills.

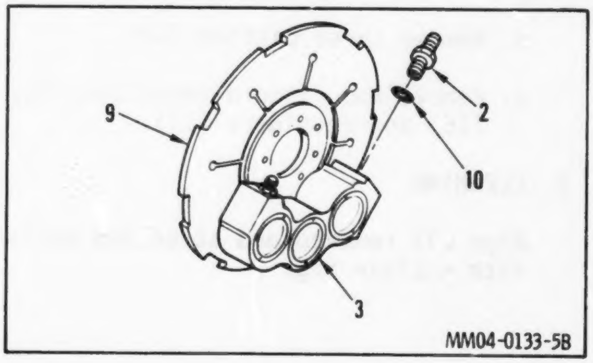


NOTE

- If brake disk is being replaced, perform steps 4 and 5.
- If friction lining is being replaced, perform steps 4, 5, and 7.
- If pistons are being replaced, perform steps 4, 5, and 7.
- If wheel housing is being replaced, perform steps 4 thru 8.



4. **Remove mounting bolts (5).**
   a. Hold eight bolts (5). Remove nuts (6).
   b. Remove eight bolts (5), washers (7), and washers (8) from housing (3).
5. **Remove disk (9) from housing (3).**
6. **Remove union (2) from housing (3).** Remove and discard packing (10).



GO TO NEXT PAGE

best copy available

3-4-10. WHEEL BRAKE, FRICTION LINING, BRAKE DISK, AND PISTON REMOVAL (cont) 3-4-10

7. **Remove friction linings (11) and (12) from housing (3).**

   a. Insert screwdriver between linings (11) and (12).

   b. Press lining (11) with screwdriver until brake pistons (13) seat.

   c. Remove screwdriver.

   d. Remove and discard linings (11) and (12) from housing (3).

8. **Remove pistons (13) from housing (3).**

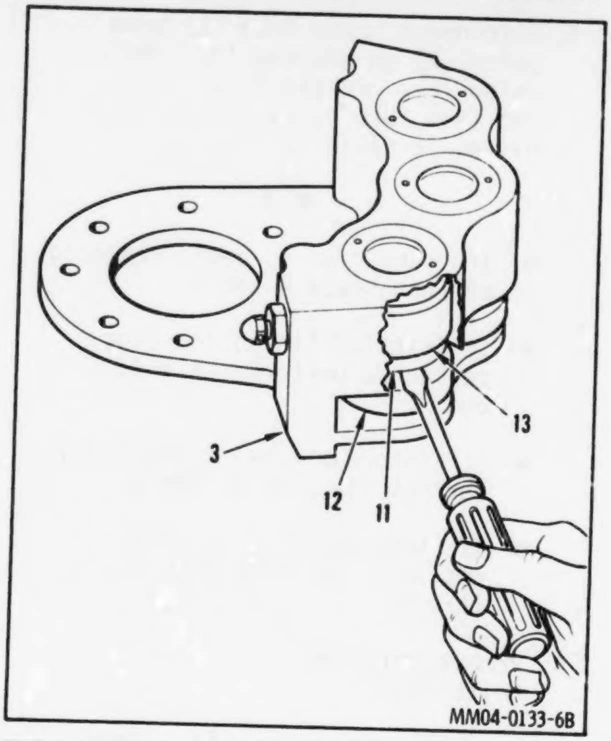
   a. Remove lockwire from cylinder heads (14).

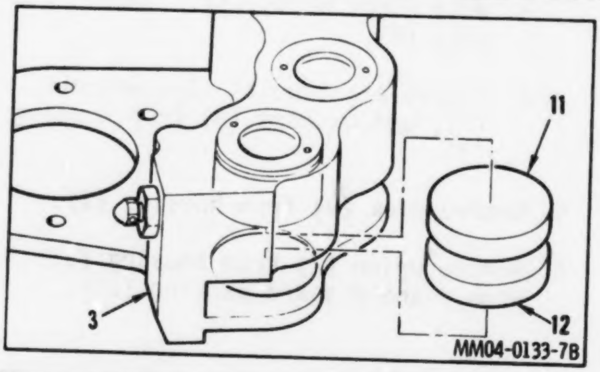
   b. Remove three heads (14). Use spanner wrench.

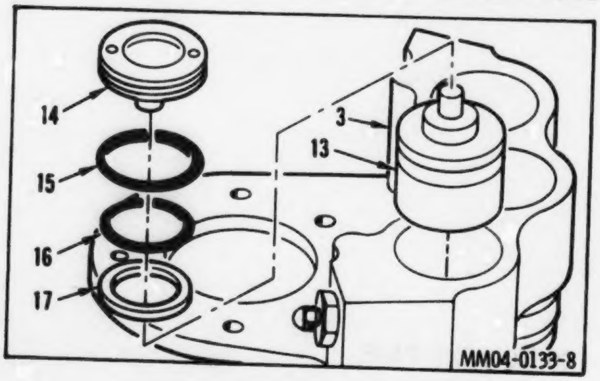
   c. Remove and discard three packings (15).

   d. Remove three pistons (14).

   e. Remove and discard three packings (16) and retainers (17).







B. CLEANING

Wipe all removed and attaching parts with a clean rag.

GO TO NEXT PAGE

3-4-10. WHEEL BRAKE, FRICTION LINING, BRAKE DISK, AND PISTON REMOVAL (cont) 3-4-10

C. INSPECTION

1. **Check housing, linings, and pistons for cracks.** None allowed.
2. **Check housing, pistons, and cylinder heads for corrosion** (para 1-5-38).
3. **Check disk for wear.** Any disk worn in excess of **0.120-INCH** is not acceptable.
4. **Check disk for dishing.** Any disk dished in excess of **0.025-INCH** is not acceptable.
5. **Check cylinder heads for thread damage, scores, or cracks.** None allowed.

END OF TASK

3-4-11. WHEEL BRAKE, FRICTION LINING, BRAKE DISK, AND PISTON INSTALLATION 3-4-11

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Hydraulic Repairer	5180-00-323-4891
Wrench, Torque, 3/8 Drive	5120-00-288-8865
Wrench, Spanner	5120-00-215-1882

Materials/Parts:

Retainer (3)
Packing (7)
(E8) Lockwire
(E13) Hydraulic Fluid

Personnel Required:

68H10	Aircraft Pneudraulic Repairer
66R30	Inspector/Supervisor

References:

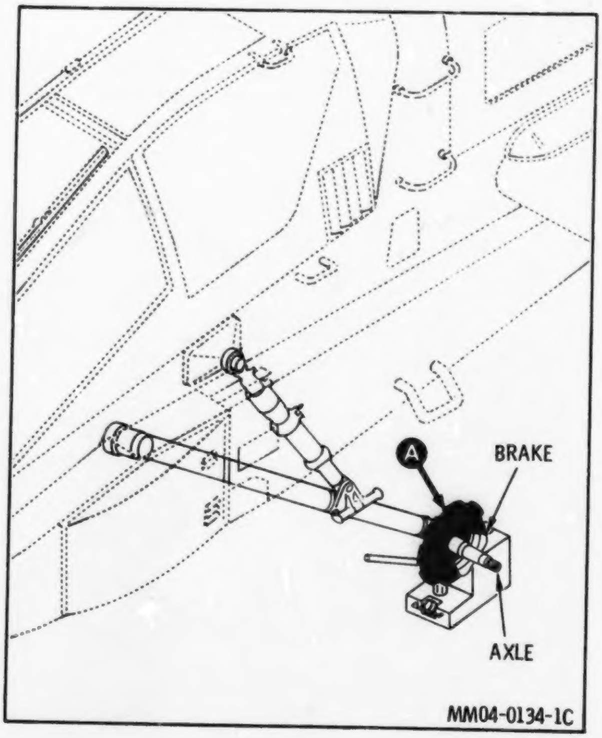
TM 55-1520-238-T

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed

NOTE

- If replacement wheel is being installed, perform steps 3 thru 15.
- If new friction linings are being installed, perform steps 6 thru 15.
- If new pistons are being installed, perform steps 6, 14, and 15.



GO TO NEXT PAGE

3-4-11. WHEEL BRAKE, FRICTION LINING, BRAKE DISK, AND PISTON INSTALLATION (cont) 3-4-11

1. **Lubricate new packing (1) and union (2).** Use hydraulic fluid (E14).

2. **Install packing (1) on union (2).**

NOTE

To provide for left and right brake installation, union and bleed fittings are interchangeable.

3. **Install union (2) in housing (3).** Torque union (2) to **135 INCH-POUNDS.**

4. **Install pistons (4) in housing (3).**

   a. Lubricate three new packings (5) and retainers (6). Use hydraulic fluid (E14).

   b. Install retainers (6) and packings (5) on three pistons (4).

   c. Install pistons (4) in housing (3). If friction linings (7) were not removed, seat pistons on installed linings.

   d. Lubricate three new packings (8). Use hydraulic fluid (E14).

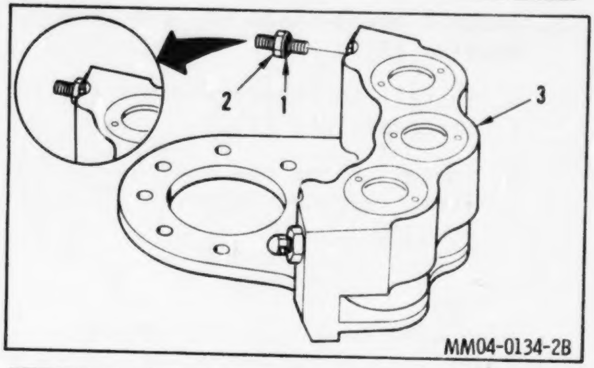
   e. Install packings (8) on three heads (9).

   f. Install heads (9) in housing (3). Use spanner wrench.

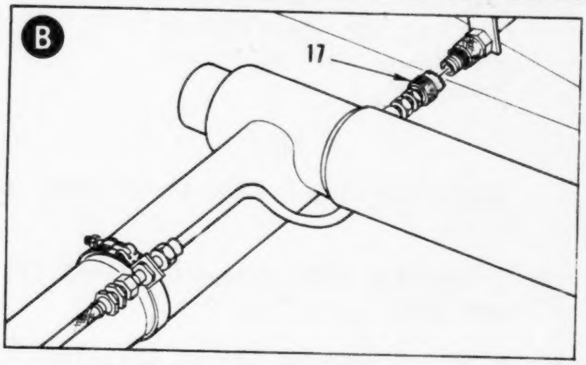
   g. Tighten heads (9) flush with housing (3).

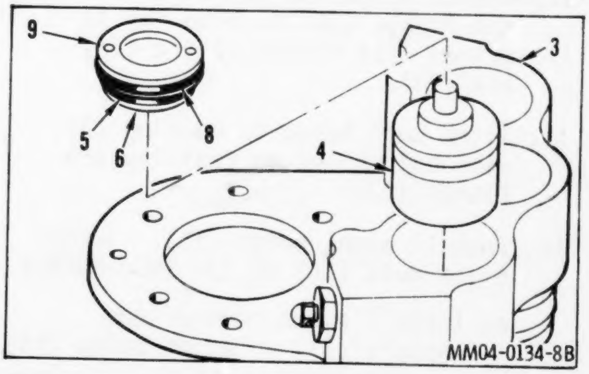
   h. Lockwire heads (9) together. Use lockwire (E8).

5. **Inspect (TI).**

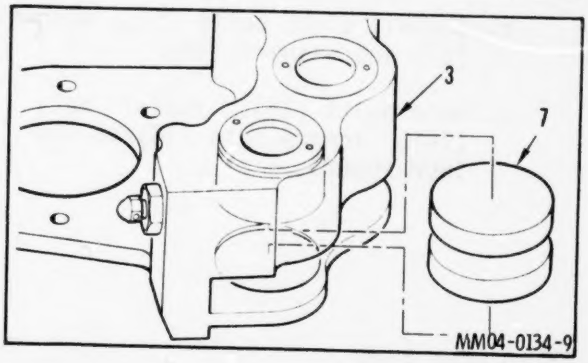


MM04-0134-2B





MM04-0134-8B



MM04-0134-9

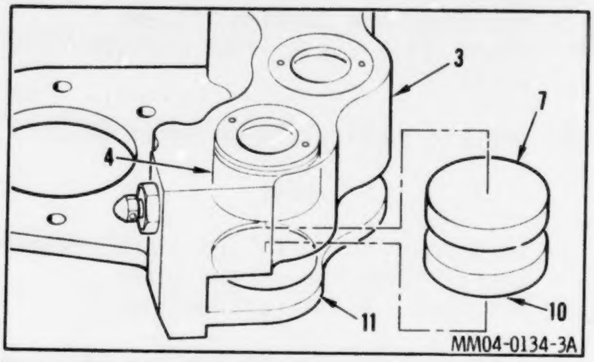
GO TO NEXT PAGE

3-4-11. WHEEL BRAKE, FRICTION LINING, BRAKE DISK AND PISTON INSTALLATION (cont) 3-4-11

8. **Install new linings (7) and (10) in housing (3).**

   a. Install three new linings (7) on three pistons (4).

   b. Install three new linings (10) in three recesses in anvil (11) of housing (3).



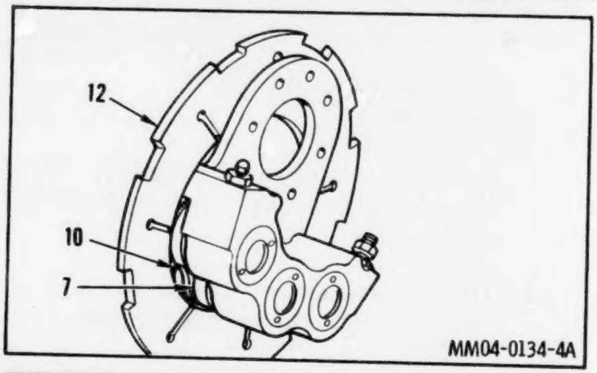
MM04-0134-3A

CAUTION

Disk will be a snug fit between friction linings; force may be required for installation. Do not damage linings during insertion.

NOTE

Remove housing before installing disk.

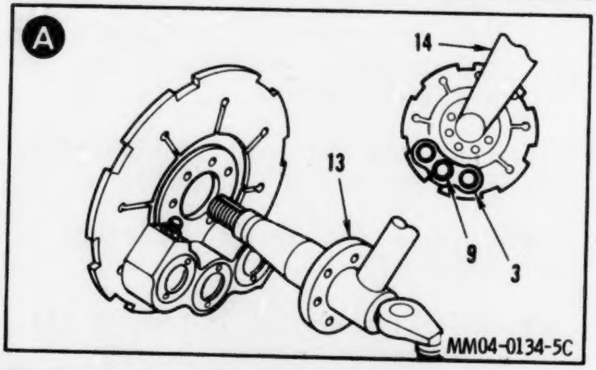


MM04-0134-4A

9. **Slide disk (12) between linings (7) and (10).**

10. **Position housing (3) on trailing arm flange (13) so head (9) is alined with center of trailing arm (14).**

11. **Aline bolt holes in housing (3) with bolt holes in trailing arm flange (13).**



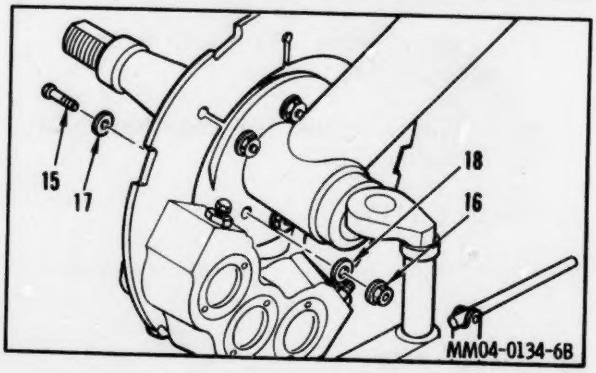
MM04-0134-5C

12. **Install eight bolts (15).** Torque eight nuts (16) to **220 INCH-POUNDS.**

    a. Install eight countersunk washers (17) on eight bolts (15).

    b. Install eight bolts (15), washers (17) and washers (18).

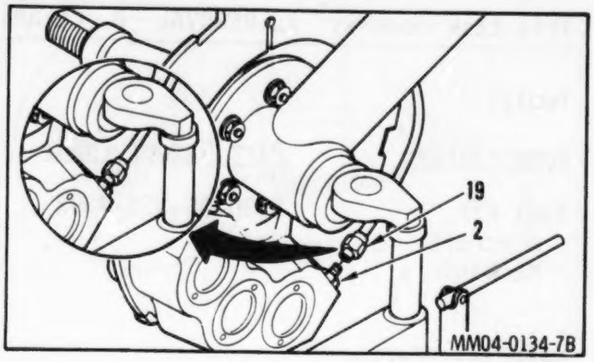
    c. Hold bolts (15). Install nuts (16). Torque nuts (16) to **220 INCH-POUNDS.**



MM04-0134-6B

GO TO NEXT PAGE

3-4-11. WHEEL BRAKE, FRICTION LINING, BRAKE DISK AND PISTON INSTALLATION (cont) 3-4-11



11. **Connect tube nut (19) to union (2).** Torque tube nut (19) to **120 INCH-POUNDS.**

    a. Hold union (2). Install nut (19).

    b. Hold union (2). Torque nut (19) to **120 INCH-POUNDS.**

12. **Install main landing gear wheel and tire** (para 3-2-7).

13. **Bleed brake system** (para 1-5-34).

14. **Inspect (TI).**

15. **Perform main landing gear operational check** (TM 55-1520-238-T).

END OF TASK

3-4-12. MAIN LANDING GEAR WHEEL BRAKE HOSE REMOVAL/INSTALLATION 3-4-12

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Materials/Parts:

(E13) Hydraulic Fluid

Personnel Required:

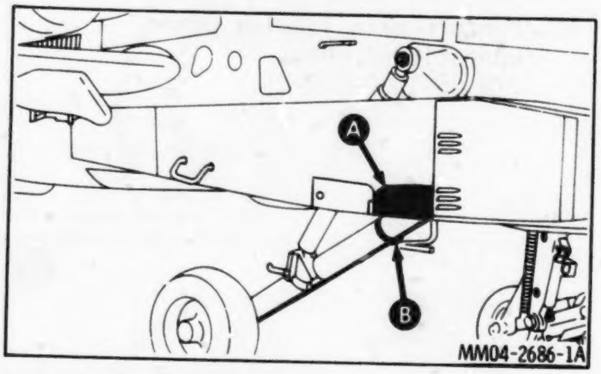
67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

Equipment Conditions:

Ref	Condition
1-7-2	Helicopter safed
2-2-2	Access doors L115 and R115 opened

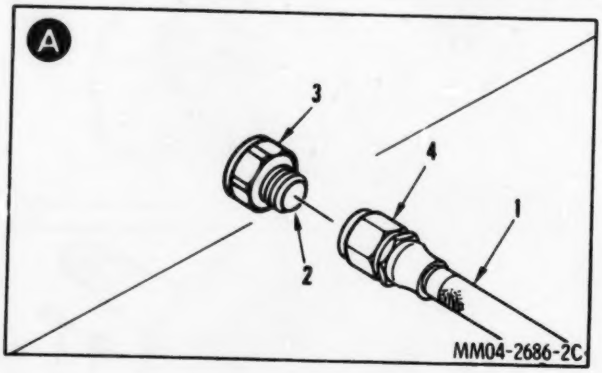
A. REMOVAL

1. Verify wheel chocks are in place.
2. Enter pilot station (para 1-7-1). Observe all safety precautions.
3. Release parking brakes (para 1-7-6).



MM04-2686-1A

4. Remove hose (1) from bulkhead union (2).
   a. Hold jam nut (3).
   b. Disconnect hose nut (4).

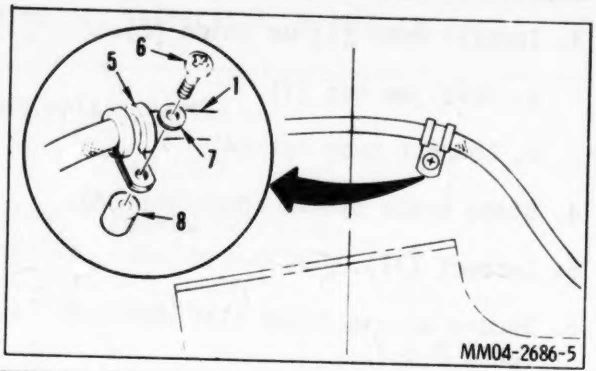


MM04-2686-2C

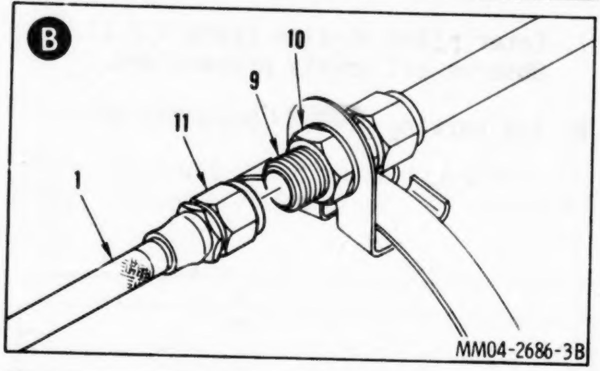
GO TO NEXT PAGE

3-4-12. MAIN LANDING GEAR WHEEL BRAKE HOSE REMOVAL/INSTALLATION (cont) 3-4-12

5. **Remove hose clamp (5).**
   - a. Remove screw (6) and washer (7).
   - b. Remove spacer (8).
   - c. Remove clamp (5) from hose (1).



6. **Remove hose (1) from union (9).**
   - a. Hold jam nut (10).
   - b. Disconnect hose nut (11).



B. **CLEANING**

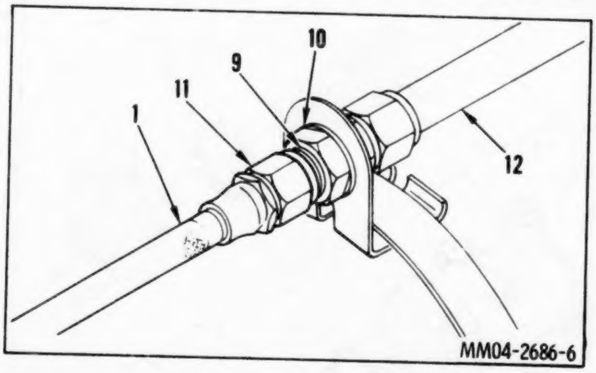
Wipe all removed and attaching parts with a clean rag.

C. **INSPECTION**

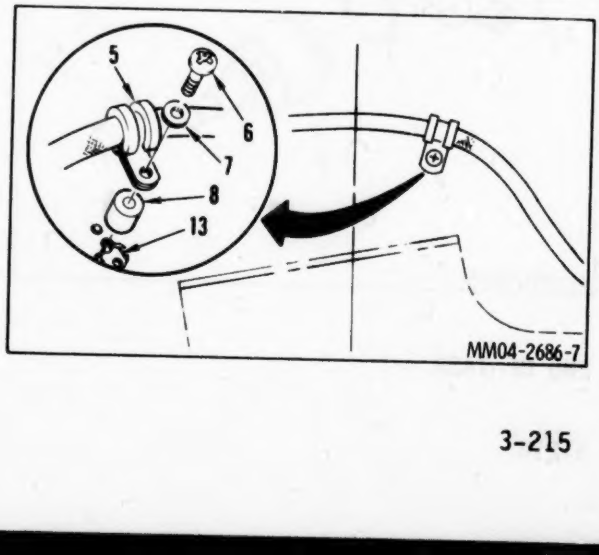
Check unions for looseness and thread damage (para 3-4-1).

D. **INSTALLATION**

1. **Connect hose (1) to tube (12).**
   - a. Lubricate threads of union (9). Use hydraulic fluid (E13).
   - b. Hold nut (10). Connect nut (11).

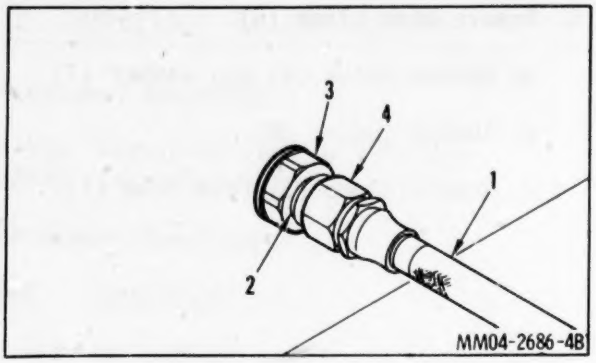


2. **Install hose clamp (5).** Install screw (6) through washer (7), clamp (5), and spacer (8) into nutplate (13).



GO TO NEXT PAGE

3-4-12. MAIN LANDING GEAR WHEEL BRAKE HOSE REMOVAL/INSTALLATION (cont) 3-4-12



3. Install hose (1) on union (2).
   a. Hold jam nut (3).
   b. Connect tube nut (4).
4. Bleed brake system (para 1-5-34).
5. Inspect (TI).
6. Secure access doors L115 and R115 (para 2-2-2).
7. Enter pilot station (para 1-7-1). Observe all safety precautions.
8. Set parking brakes (para 1-7-6).

END OF TASK

3-4-13. REPAIR AND TEST BRAKE TRANSFER VALVE - INTERNAL LEAKAGE (AVIM) 3-4-13

This task covers: A. DISASSEMBLY B. CLEANING C. INSPECTION D. REPAIR E. REASSEMBLY F. TEST

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Hydraulic Repairer	5180-00-323-4891
Tester, Spring	6635-00-242-1451
Caliper Set, Micrometer, Outside	5120-00-554-7134
Gage, Small Hole	5120-00-221-2083
Test Stand, Hydraulic System Components	4920-00-141-8801
Wrench, Torque, 1/4 Drive	5120-00-117-4832

Materials/Parts:

	Cap Lock
	Packing (2)
(E13)	Hydraulic Fluid
(E107)	Lapping Compound
(E108)	Oil, Lapping
(E109)	Abrasive Cloth

Personnel Required:

68H10	Aircraft Pneudraulic Repairer
66R30	Inspector/Supervisor

A. DISASSEMBLY

WARNING

Transfer valve is spring loaded. Remove cap carefully to prevent personal injury. If injury occurs, seek medical aid.

1. **Remove cap (1) from valve body (2).**

   a. Remove lockwire.

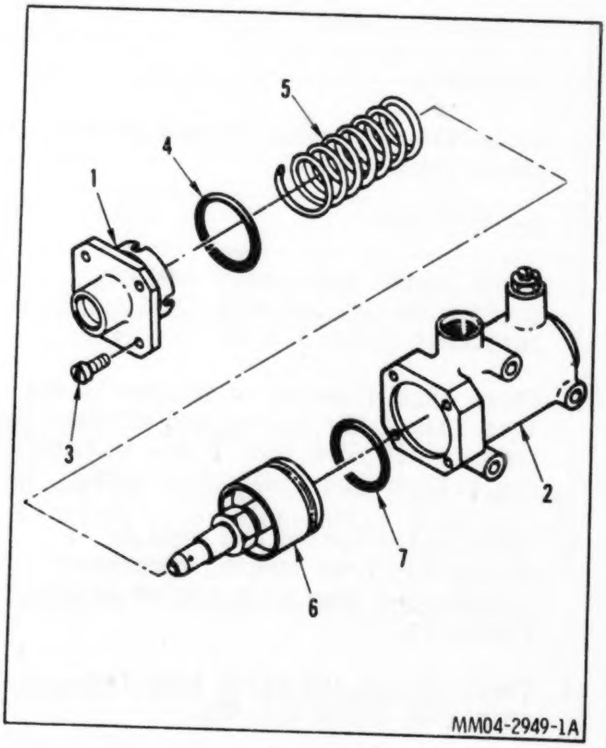
   b. Remove four screws (3).

   c. Remove cap (1) and packing (4).

   d. Remove spring (5) from piston (6).

   e. Remove piston (6) and packing (7) from valve body (2).

   f. Discard packings (4) and (7).



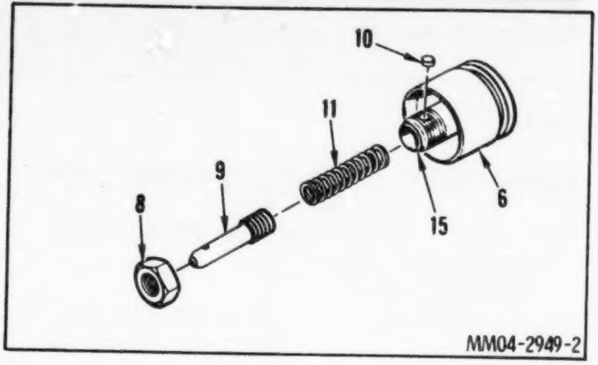
GO TO NEXT PAGE

3-4-13. REPAIR AND TEST BRAKE TRANSFER VALVE - INTERNAL LEAKAGE (AVIM) (cont) 3-4-13

WARNING

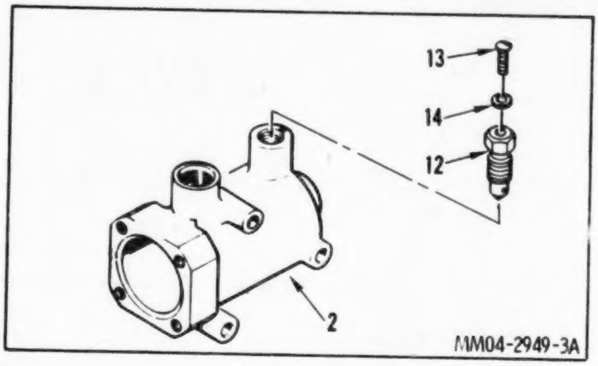
Piston is spring loaded. Remove cap nut carefully to prevent personal injury. If injury occurs, seek medical aid.

2. Disassemble piston (6).
   a. Hold piston (6). Remove cap nut (8).
   b. Remove lock (10), poppet (9), and spring (11) from piston bore (15).
   c. Discard lock (10).



MM04-2949-2

3. Remove bleeder (12) from valve body (2).
   a. Hold bleeder (12). Remove screw (13) and washer (14).
   b. Remove bleeder (12).



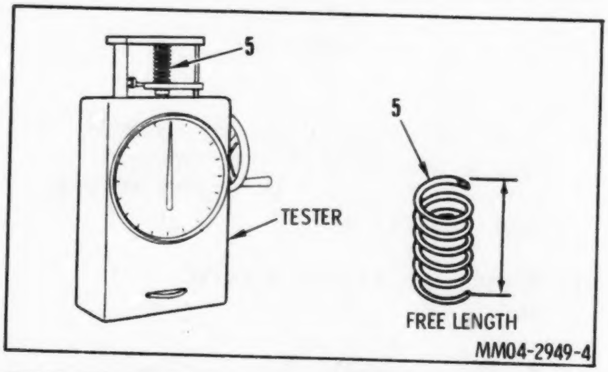
MM04-2949-3A

B. CLEANING

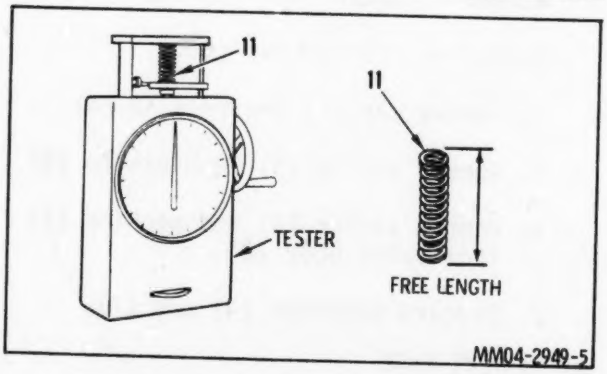
Clean all components of transfer valve (para 1-5-36).

C. INSPECTION

1. Check poppet and poppet seating surface on cap for nicks and scratches (para 3-4-1).
2. Check that diameter of piston is not less than 1.497 inches and piston bore is not more than 0.406 inches. Use caliper and small hole gage.
3. Check valve spring and poppet spring for free length, compressed length, and load with spring tester (table I).
4. Check piston and valve body for corrosion (para 1-5-38).



MM04-2949-4



MM04-2949-5

GO TO NEXT PAGE

3-4-13. REPAIR AND TEST BRAKE TRANSFER VALVE - INTERNAL LEAKAGE (AVIM) (cont) 3-4-13

Table I. Spring Test Data

Index No.	Free Length (in.)	Compressed Length (in.)	Load (lb.)
5	--	2.000	9 to 11
11	2.19 to 2.25	0.500	1.14 to 1.34

Table II. Surface Finish Requirements

Index No.	Nomenclature	Surface	Max. Surface Roughness (Microinches, RMS)
1	Cap	Valve Seat	16
		Packing Groove	32
9	Poppet	Major OD	16
		ID	8
6	Piston	Major OD	16
		Packing Groove	32
2	Body	ID	8

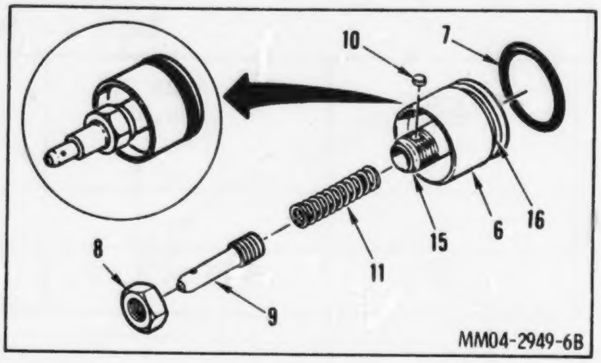
D. REPAIR

1. **Repair transfer valve by polishing poppet.** Use abrasive cloth (E109).
2. **Repair transfer valve by lapping poppet to seating surface of cap.** Use lapping compound (E107) and lapping oil (E108). Clean cap and poppet after lapping (para 1-5-36).
3. **Replace poppet and seat which, after polishing or lapping, do not meet finish requirements (table II).**
4. **Replace cap lock and packings each time transfer valve is disassembled.**

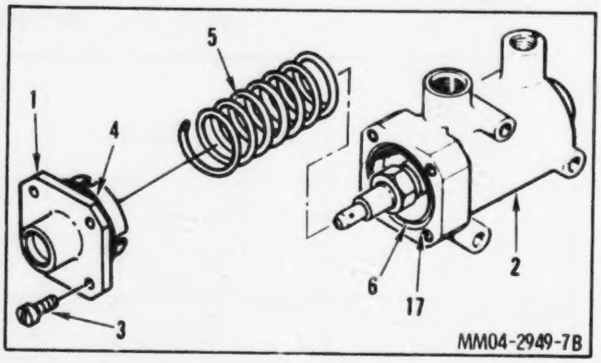
GO TO NEXT PAGE

3-4-13. REPAIR AND TEST BRAKE TRANSFER VALVE - INTERNAL LEAKAGE (AVIM) (cont) 3-4-13

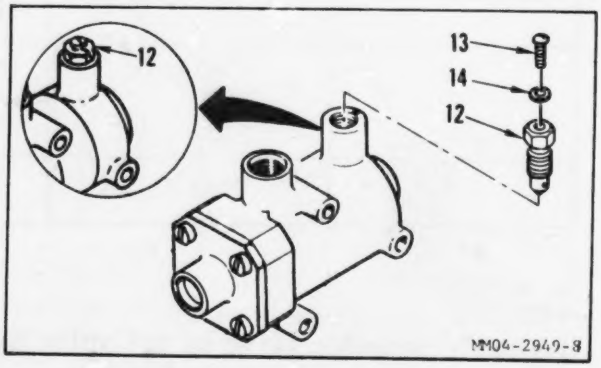
E. REASSEMBLY



1. **Assemble piston (6).**
   - a. With head of piston (6) down, insert poppet spring (11) into bore (15).
   - b. Insert poppet (9) over spring (11).
   - c. Insert cap nut (8) over poppet (9).
   - d. Push down on poppet (9) and spring (11).
   - e. Insert new lock (10) into bore (15)
   - f. Install cap nut (8) until it bottoms.
   - g. Lubricate new packing (7). Use hydraulic fluid (E13).
   - h. Install packing (7) in piston groove (16).



2. **Lubricate bore (17). Use hydraulic fluid (E13). Install piston (6).**
3. **Install valve spring (5) on piston (6).**
4. **Lubricate new packing (4). Use hydraulic fluid (E13). Install packing (4) on cap (1).**

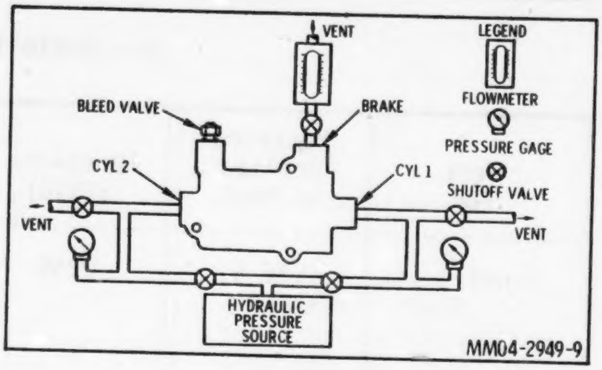


5. **Push in on cap (1) to aline holes. Install four screws (3) in valve body (2). Torque screws (3) to 21 INCH-POUNDS.**
6. **Install bleeder (12).**
   - a. Install bleeder (12).
   - b. Install washer (14) and screw (13).
7. **Inspect (TI).**

GO TO NEXT PAGE

3-4-13. REPAIR AND TEST BRAKE TRANSFER VALVE - INTERNAL LEAKAGE (AVIM) (cont) 3-4-13

F. TEST



NOTE

- A standard hydraulic test stand equipped with pressure gages, a hydraulic reservoir, and a means of providing controlled pressures to 2250 psig, are required to test transfer valves.
- Hydraulic fluid shall be from 70 to 110 °F (21 to 43 °C).

1. **Install transfer valve to hydraulic test stand and perform tests (table III).** Use hydraulic fluid (E13).

GO TO NEXT PAGE

Table III. Test

Test For	Pressure Applied to Port	Pressure (PSIG)	Plug Port	Requirements
Proof	CYL 1	2250	Brake	Bleed air from valve by first permitting flow through BRAKE port. Cap port. Hold pressure 3 minutes. There shall be no internal leakage from CYL 2 port, no external leakage, or failure of valve.
	CYL 2	2250	-	Purge air from valve by applying low pressure to CYL 2 port. Bleed fluid through bleeder valve. Close bleeder valve. Increase and hold pressure 3 minutes. There shall be no leakage from CYL 1 port, no external leakage, or failure of valve.
Poppet relieving pressure	CYL 2	100	-	With pressure applied to CYL 2 port and other ports vented, apply pressure to CYL 1 port, gradually increasing until relieving pressure of poppet is observed. Pressure required at CYL 1 port to unseat poppet to permit flow of 20 cc/min shall not be more than 30 PSIG.

GO TO NEXT PAGE

Table III. Test (cont)

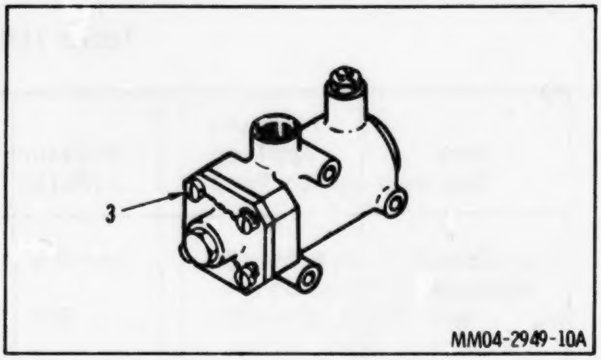
Test For	Pressure Applied to Port	Pressure (PSIG)	Plug Port	Requirements
Internal leakage	CYL 2	5 500 1200	-	Hold each pressure 3 minutes. There shall be no leakage from the CYL 1 or BRAKE ports.
		10 500 1200	BRAKE	Fill BRAKE port with fluid. Cap port. Apply each pressure 3 minutes. Leakage from CYL 1 port shall not be more than 1 drop per minute at any pressure.
Maximum actuation pressure	CYL 2	See requirements	-	With CYL 1 and BRAKE ports vented, slowly apply pressure. Observe pressure required to start valve piston movement. Pressure required shall not be more than **12 PSIG**. (Movement can be observed by placing a nylon rod against end of poppet through CYL 1 port).

GO TO NEXT PAGE

3-4-13. REPAIR AND TEST BRAKE TRANSFER VALVE - INTERNAL LEAKAGE (AVIM) (cont) 3-4-13

2. Lockwire four screws (3) together in pairs. Use lockwire (E29).

3. Inspect (TI).



END OF TASK

3-4-14. PARKING BRAKE MASTER CYLINDER - DISASSEMBLY/ASSEMBLY (AVIM) 3-4-14

This task covers: A. DISASSEMBLY B. CLEANING C. INSPECTION D. REASSEMBLY E. TEST

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Hydraulic Repairer	5180-00-323-4891
Punch, Drive Pin, 1/16	5120-00-240-6082
Tester, Spring 20 lb	6635-00-242-1451
Test Stand, Hydraulic Test Fixture	4920-01-119-8795
Goggles	4240-00-052-3776

Materials/Parts:

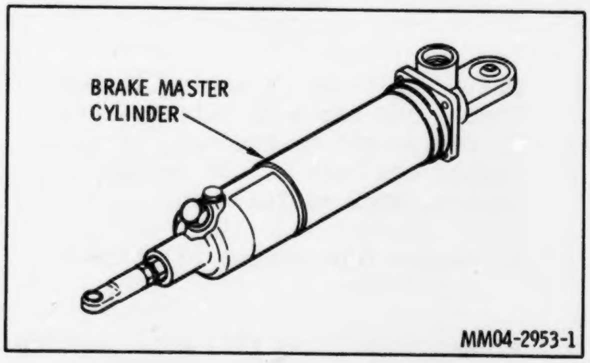
	Shims
	Gasket
	Seal
	Nyloc
	Clip
	Packing (3)
(E1)	Solvent
(E13)	Hydraulic Fluid
(E29)	Lockwire
(E32)	Cloth, Lint-Free

Personnel Required:

68H10	Aircraft Pneudraulic Repairer (2) One to assist
66R30	Inspector/Supervisor

References:

TM 55-1500-335-23



GO TO NEXT PAGE

3-4-14. PARKING BRAKE MASTER CYLINDER - DISASSEMBLY/ASSEMBLY (AVIM) (cont) 3-4-14

A. DISASSEMBLY

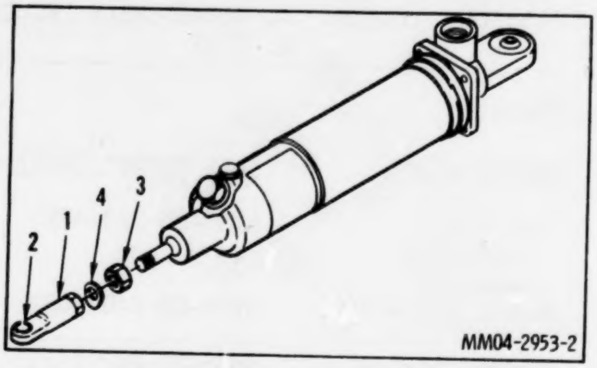
1. **Remove rod end (1) with bearing (2).**

   a. Remove and discard lockwire.

   b. Hold rod end (1) and loosen jam nut (3).

   c. Remove rod end (1).

   d. Remove washer (4) and jam nut (3).



2. **Disassemble cylinder (5).**

   a. Remove lockwire from screws (6) and filler cap (7).

   b. Remove bleed screw (8) and seal (9). Discard seal (9).

   c. Remove cap (7) and gasket (10). Discard gasket (10).

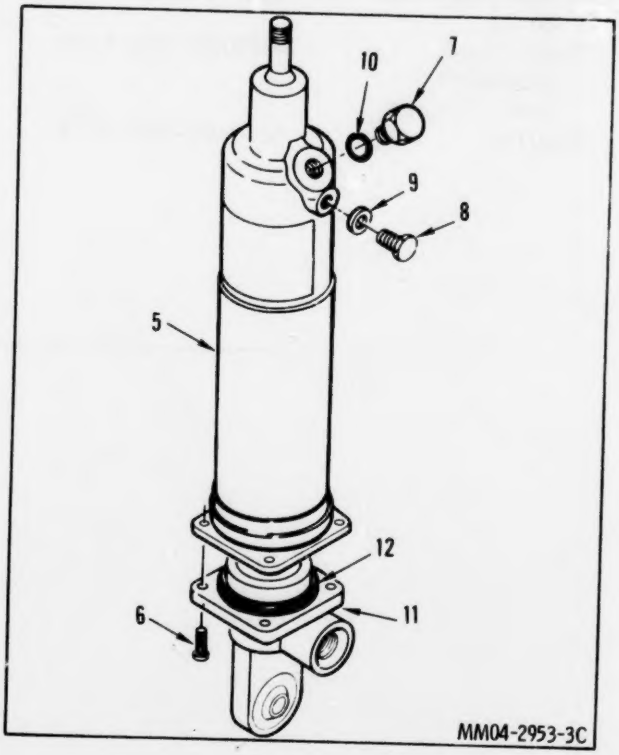
WARNING

Master cylinder is spring loaded. Remove end cap with extreme care. If cap is not restrained, serious injury can result. If injury occurs, seek medical aid.

   d. Remove four screws (6) from end cap (11).

   e. Remove end cap (11) with packing (12) from cylinder (5).

   f. Remove and discard packing (12).



GO TO NEXT PAGE

3-4-14. PARKING BRAKE MASTER CYLINDER - DISASSEMBLY/ASSEMBLY (AVIM) (cont)

g. Slowly push piston rod (13) from upper end (14) of cylinder (5) and pull internal components free.

h. Remove piston rod (13) with packing (15) from cylinder (5). Discard packing (15).

i. Remove cap (16).

j. Remove shim (17) if used.

k. Remove spring (18) and poppet (19).

l. Remove push rod (20) with packing (21) from sleeve (22). Discard packing (21).

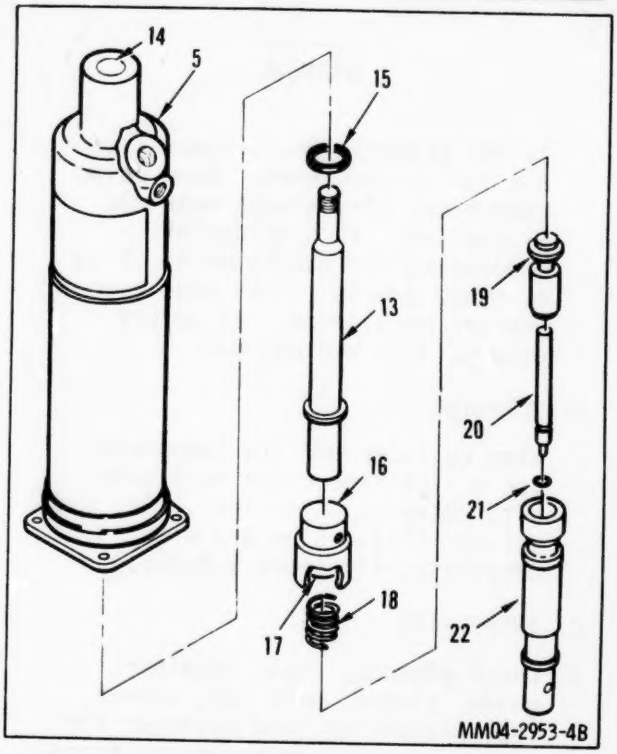
m. With helper, compress sleeve (22) until pin (23) is accessible.

n. Remove pin (23). Use punch.

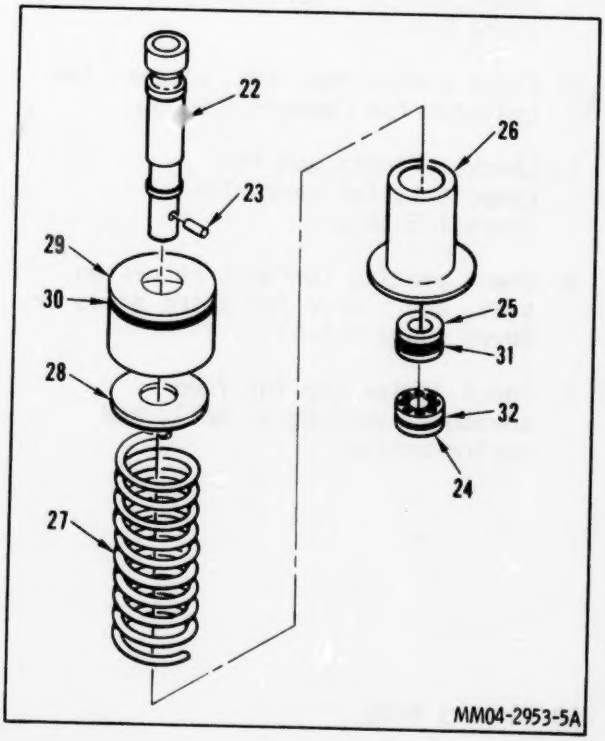
o. Slowly release sleeve (22) and separate piston (24), seat (25), retainer (26), spring (27), guide (28), and piston (29).

p. Remove and discard packings (30) and (31).

q. Remove clip (32).



MM04-2953-4B



MM04-2953-5A

GO TO NEXT PAGE

3-4-14. PARKING BRAKE MASTER CYLINDER - DISASSEMBLY/ASSEMBLY (AVIM) (cont) 3-4-14

WARNING

If not properly used, compressed air can be dangerous. When using compressed air, always wear eye protection. If a stream of compressed air causes metal chips or other debris to hit your eyes, you can be blinded. If injury occurs, seek medical aid.

B. CLEANING

Wipe cylinder and its components. Use a lint-free cloth moistened with solvent. Use cloth (E32) and solvent (E1). Blow dry with compressed air (para 1-5-36).

C. INSPECTION

1. Check pistons, seat, retainer, guide, sleeve, push rod, poppet, cap, piston rod, and cylinder for nicks, cracks, scratches, or scores (para 3-4-1).
2. Check piston rod, cap, sleeve, and cylinder for damaged threads.
3. Check cylinder and its components for corrosion (para 1-5-38).
4. Check seating surfaces of piston, seat, and sleeve for sharp edges or burrs (para 3-4-1).
5. Check filler cap for free movement, seating of ball, and spring action.

GO TO NEXT PAGE

3-4-14. PARKING BRAKE MASTER CYLINDER - DISASSEMBLY/ASSEMBLY (AVIM) (cont)

6. Check rod end bearing and end cap bearing for free movement and smooth operation.

7. Check rod end and end cap for nicks, cracks, scratches, or scores and for damaged threads.

8. Check springs for discoloration, misalinement, permanent set, and distortion.

   a. Roll springs on smooth flat surface. No wobble allowed.

   b. Measure free length. Poppet spring free length should be **0.666 to 0.688 INCH**. Piston spring free length should be **4.17 to 4.23 INCHES**.

   c. Measure compressed length. Poppet spring compressed length should be **0.578 INCH** under a **3.3- to 3.6-pound** test load. Piston spring compressed length shoud be **3.2 INCHES** under an **11.6- to 12.0- pound** test load.

9. Check sleeve screen for damage, contamination, or clogging.

10. Magnetically examine push rod and sleeve for cracks (TM 55-1500-335-23).

GO TO NEXT PAGE

11. **Check components for dimensional tolerance.** Use steel rule, inside and outside micrometers.

    a. End cap ID should be **0.6865 to 0.6877 INCH.**

    b. Piston OD and seat should be **0.6843 to 0.6855 INCH.**

    c. Piston OD should be **1.2473 to 1.2485 INCHES.**

    d. Piston ID should be **0.4995 to 0.5007 INCH.**

    e. Push rod OD should be **0.1557 to 0.1562 INCH.**

    f. Sleeve OD should be **0.4974 to 0.4985 INCH.**

    g. Sleeve ID mating with poppet should be **0.3425 to 0.3437 INCH.**

    h. Sleeve ID mating with push rod should be **0.1570 to 0.1592 INCH.**

    i. Piston rod OD should be **0.3728 to 0.3740 INCH.**

    j. Cylinder ID at piston end should be **1.2500 to 1.2524 INCHES.**

    k. Cylinder ID at rod end should be **0.3750 to 0.3774 INCH.**

D. REASSEMBLY

1. **Dip all parts in hydraulic fluid before assembly.** Use hydraulic fluid (E13).

GO TO NEXT PAGE

3-4-14. PARKING BRAKE MASTER CYLINDER - DISASSEMBLY/ASSEMBLY (AVIM) (cont) 3-4-14

2. **Assemble piston.**

   a. Place poppet (19) in sleeve (22).

   b. Place spring (18) in cap (16).

   c. Install cap (16) with spring (18) on sleeve (22).

   d. Measure piston length. Piston must be exactly 3.53 inches long.

   e. Measure poppet (19) staging pressure. Use test fixture. Staging pressure must be 65 to 71 pounds.

   f. Adjust length and pressure as required. One turn of cap (16) equals 0.055-inch which equals approximately 22 pounds. Use shims (17) under cap (16) to adjust length.

3. **Install new packing (21) on push rod (20).**

4. **With rounded end facing poppet (19), install push rod (20) with packing (21) into sleeve (22).**

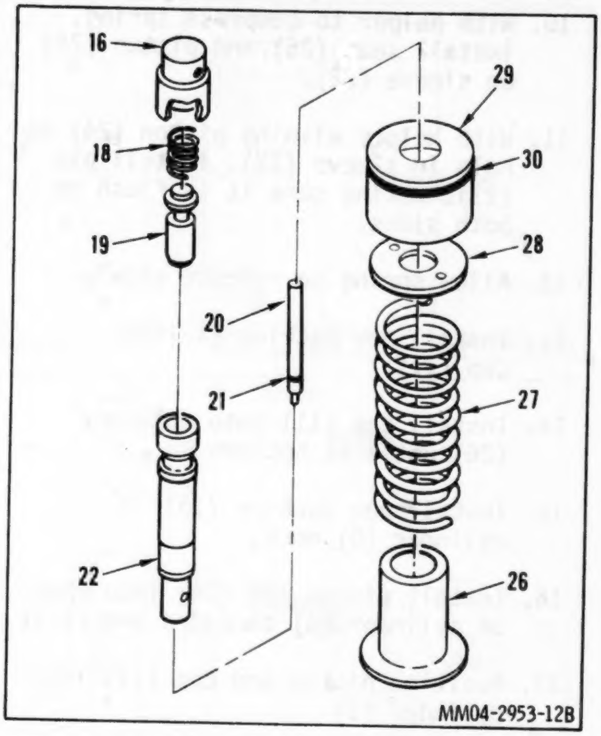
5. **Install new packing (30) on large piston (29).**

6. **Install piston (29) and guide (28) on spring (27).**

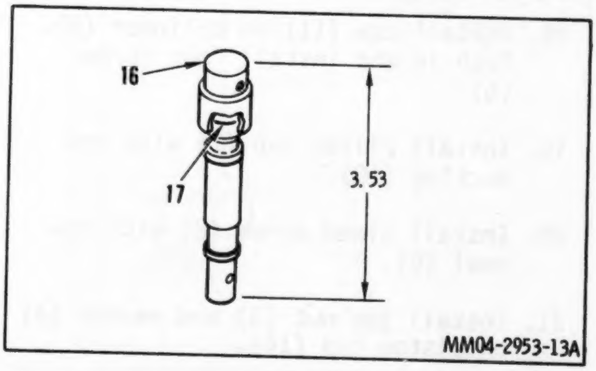
7. **Install retainer (26) into spring (27) over sleeve (22).**

8. **Install new packing (31) on seat (25).**

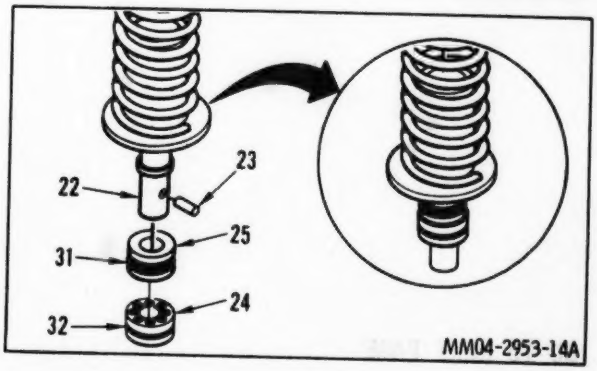
9. **Install clip (32) on piston (24).**



MM04-2953-12B



MM04-2953-13A



MM04-2953-14A

GO TO NEXT PAGE

3-4-14. PARKING BRAKE MASTER CYLINDER - DISASSEMBLY/ASSEMBLY (AVIM) (cont) 3-4-14

10. With helper to compress spring, install seat (25) and piston (24) on sleeve (22).

11. With helper alining piston (24) to hole in sleeve (22), install pin (23), making sure it is flush on both sides.

12. Allow spring to release slowly.

13. Install new packing (12) on cap (11).

14. Install cap (11) into retainer (26) until it bottoms.

15. Install new packing (15) in cylinder (5) neck.

16. Install piston rod (14) into neck of cylinder (5) threaded end first.

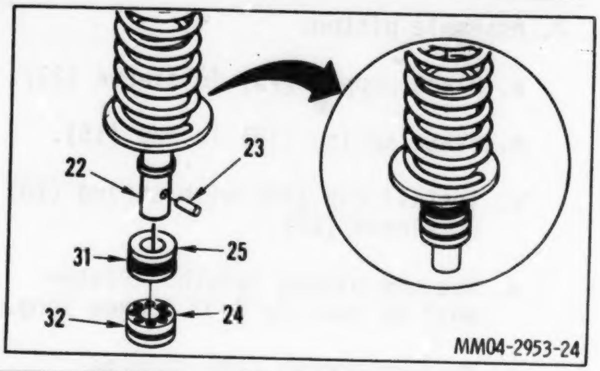
17. Position piston and cap (11) into cylinder (5).

18. Install cap (11) on cylinder (5). Push in and install four screws (6).

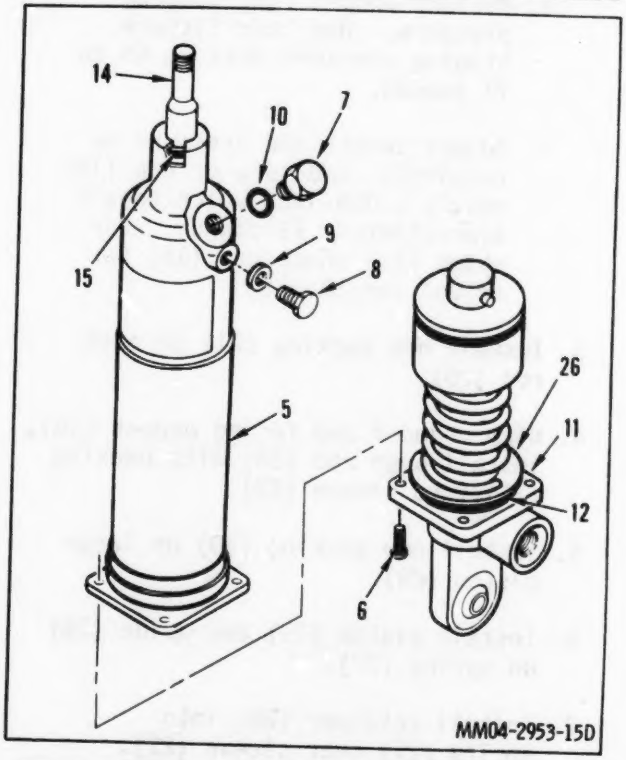
19. Install filler cap (7) with new packing (10).

20. Install bleed screw (8) with new seal (9).

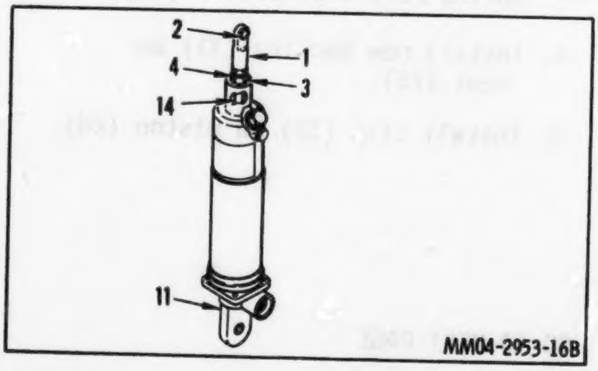
21. Install jam nut (3) and washer (4) on piston rod (14).



MM04-2953-24



MM04-2953-15D



MM04-2953-16B

GO TO NEXT PAGE

3-4-14. PARKING BRAKE MASTER CYLINDER - DISASSEMBLY/ASSEMBLY (AVIM) (cont) 3-4-14

22. Install rod end (1) on piston rod (13). Adjust rod end until center of bearing (2) is 11.13 to 11.37 INCHES from center of bearing (33) in cap (11) with bearings alined.

23. Hold rod end (1) at flats. Tighten jam nut (3).

24. Inspect (TI).

E. TEST

1. Install plug (34) in port (35).

2. Fill cylinder (5). Use hydraulic fluid (E13).

   a. Install cylinder (5) in test fixture.

   b. Remove screw (8) and seal (9).

   c. Remove cap (7) and packing (10).

   d. Connect hydraulic test stand to cylinder (5).

   e. Slowly fill cylinder (5) until fluid comes out bleed screw port.

   f. Actuate cylinder (5) several times to make sure no air remains.

   g. Top off cylinder with fluid. Use hydraulic fluid (E13).

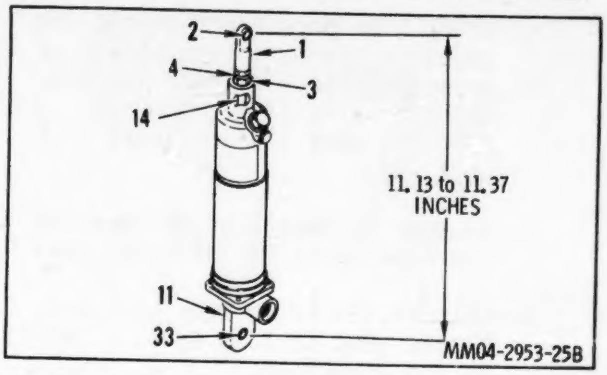
   h. Install seal (9) and screw (8).

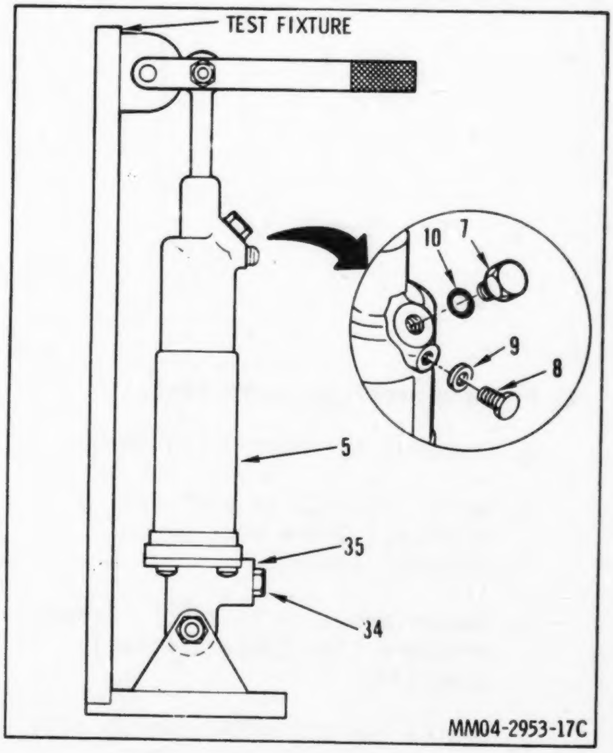
   i. Install packing (10) and cap (7).

   j. Wipe up spills. Use clean rag.

3. Test brake cylinder (5).

   a. Remove plug (34) from port (35).



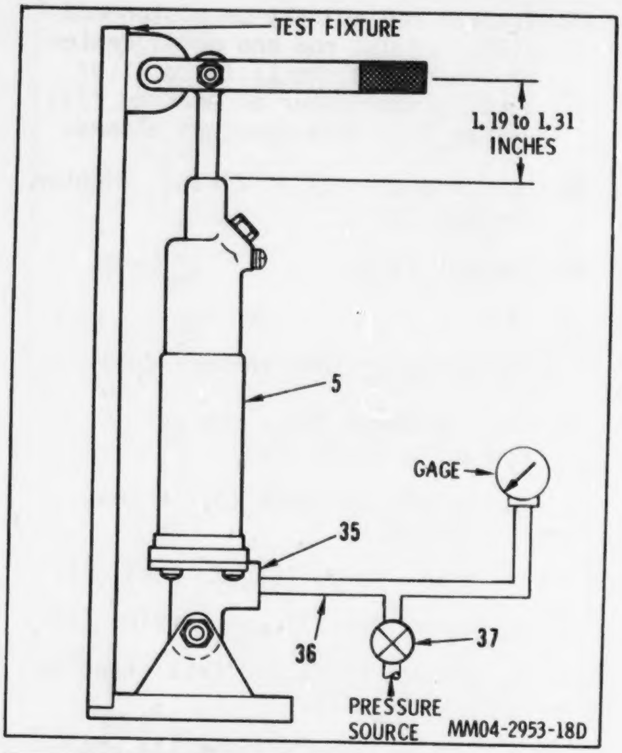


GO TO NEXT PAGE

b. Using high pressure fittings and adapters, connect test stand pressure line (36) with in-line shutoff valve (37). Connect 2500 PSI gage (38) to brake port (35).

c. Be sure cylinder (5) is serviced and bled (para E2) with no leaks.

d. Measure stroke at zero pressure. Stroke must be **1.19 to 1.31 INCHES** in one direction.



MM04-2953-18D

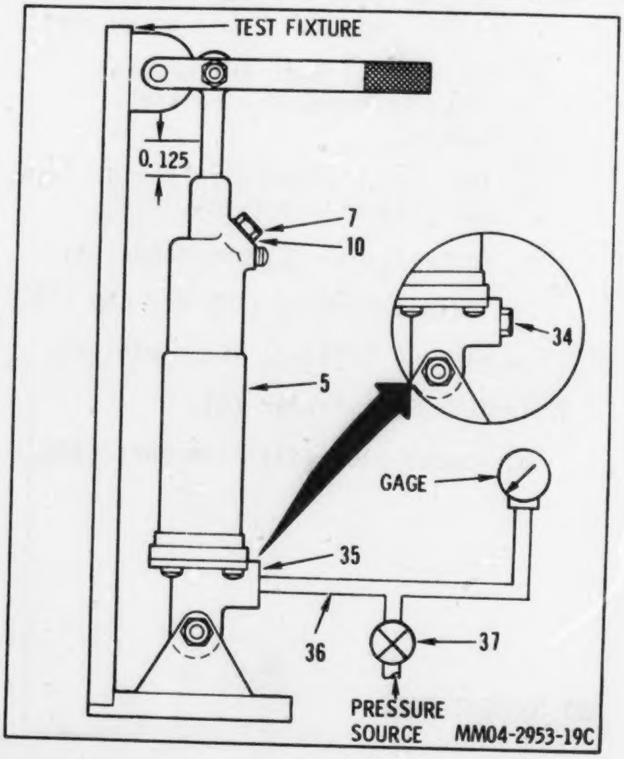
4. Perform proof pressure test.

a. Compress cylinder 0.125-inch.

b. Apply 1500 PSI to port (35) 5 minutes. There must be no external leakage.

c. Reduce pressure to zero. Remove pressure line (36). Install plug (34).

d. Remove cap (7) with packing (10). Install pressure line (36).



MM04-2953-19C

GO TO NEXT PAGE

3-4-14. PARKING BRAKE MASTER CYLINDER - DISASSEMBLY/ASSEMBLY (AVIM) (cont) 3-4-14

e. Apply 150 PSI to filler port (39). There must be no external leakage.

f. Remove pressure line (36). Install packing (10) with cap (7).

5. **Perform external leakage test.**

a. Remove plug (34) from port (35). Install pressure line (36).

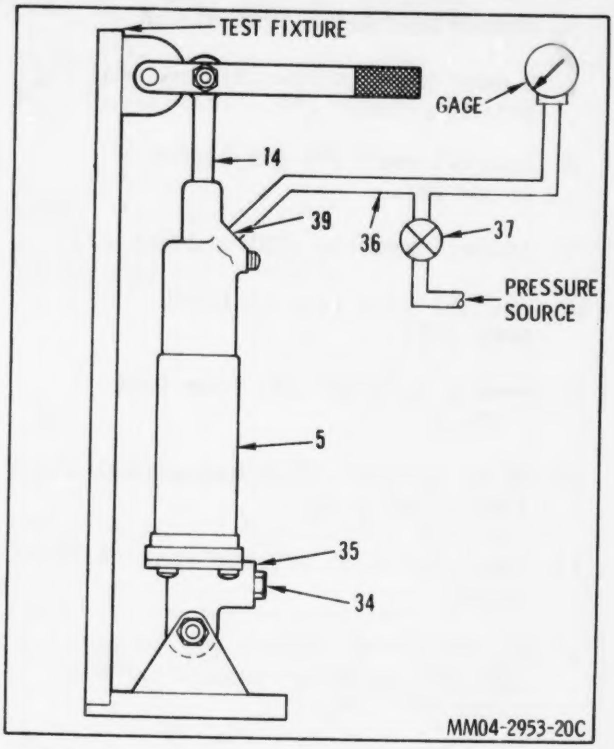
b. Close shutoff valve (37). Apply load that will generate 10 PSI at brake port (35). Movement of piston rod (14) indicates internal leakage. Hold pressure 2 minutes.

c. Increase and hold pressure at 75 PSI. Movement of piston rod (14) indicates internal leakage. Hold pressure 2 minutes.

d. Increase and hold pressure to 750 PSI. Movement of piston rod (14) indicates internal leakage. Hold pressure 2 minutes.

e. Reduce pressure to zero. Fully compress cylinder (5). Piston rod (14) must extend smoothly and rapidly while pressure drops to zero at full extension.

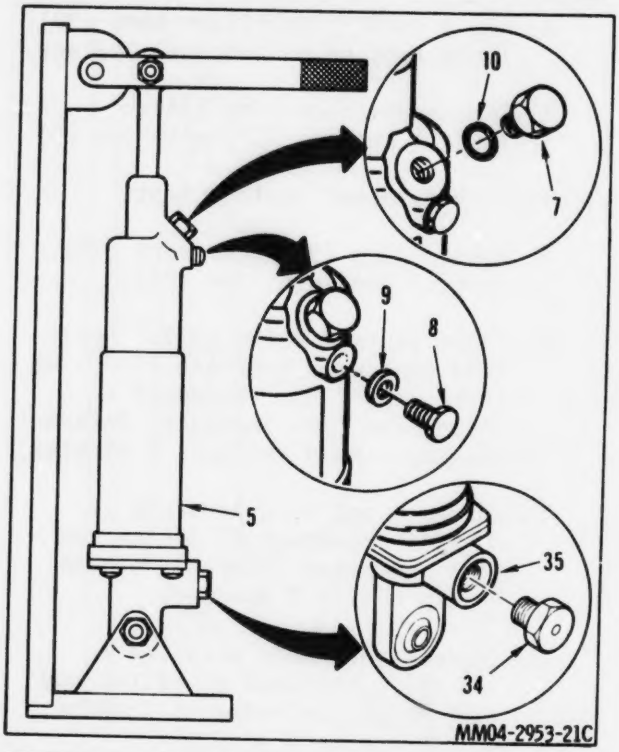
f. Remove pressure line (36).



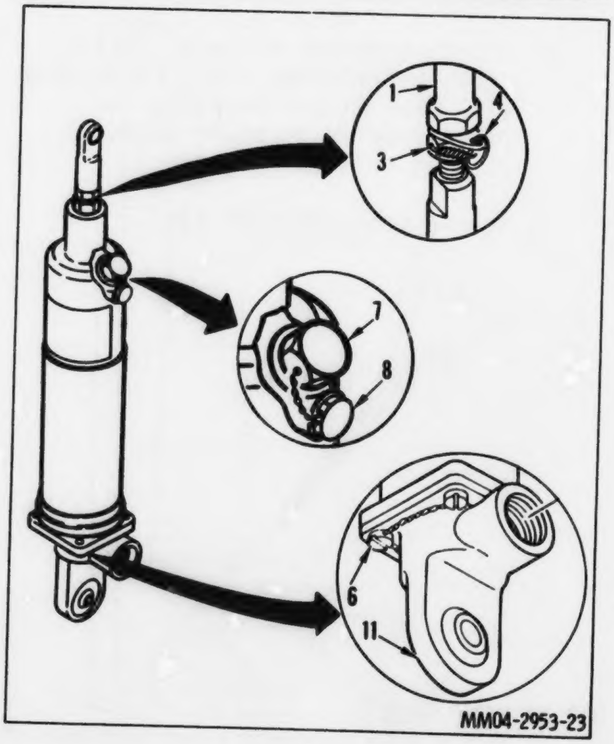
GO TO NEXT PAGE

3-4-14. PARKING BRAKE MASTER CYLINDER - DISASSEMBLY/ASSEMBLY (AVIM) (cont) 3-4-14

6. Remove hydraulic test stand.
7. Remove bleed screw (8) and seal (9). Drain cylinder (5).
8. Install seal (9) and bleed screw (8).
9. Install packing (10) and cap (7).
10. Install plug (34) in brake port (35).
11. Remove cylinder (5) from test fixture.
12. Wipe cylinder (5) clean with lint-free cloth (E32).
13. Check cylinder (5) for test related damage.
14. Lockwire four screws (6) on end cap (11) together in pairs. Use lockwire (E29).
15. Lockwire cap (7) to bleed screw (8). Use lockwire (E29).
16. Lockwire jam nut (3) to washer (4). Use lockwire (E29).
17. Inspect (TI).



MM04-2953-21C



MM04-2953-23

END OF TASK

3-4-15. PARKING BRAKE VALVE REPAIR (AVIM) 3-4-15

This task covers: A. DISASSEMBLY B. CLEANING C. INSPECTION D. REASSEMBLY E. TESTING

Tools:

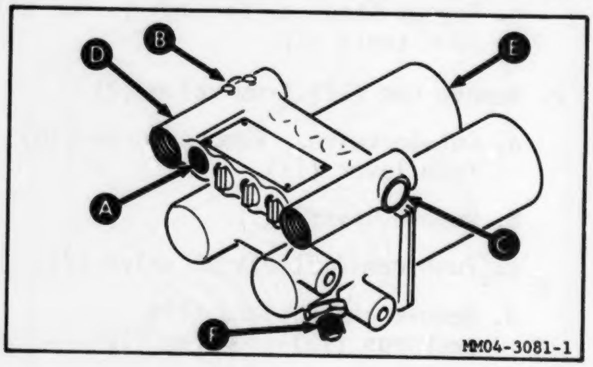
Nomenclature	Part Number (NSN)
Tool Kit, Hydraulic Repairer	5180-00-323-4891
Gun, Air Blow	4940-00-333-5541
Hose, Nonmetallic	4720-00-350-8577
Tester, Spring	6635-00-242-1451
Caliper, Inside	5120-00-229-3060
Caliper, Micrometer	5120-00-790-1899
Scale, Dial Indicating	6670-00-240-5821
Compressor, Air	4310-00-075-3311

Materials/Parts:

Packing (20)
(E1) Solvent
(E13) Hydraulic fluid
(E34) Lockwire
(E134) Hydraulic fluid

Personnel Required:

68H10 Aircraft Pneudraulic Repairer
66R30 Inspector/Supervisor

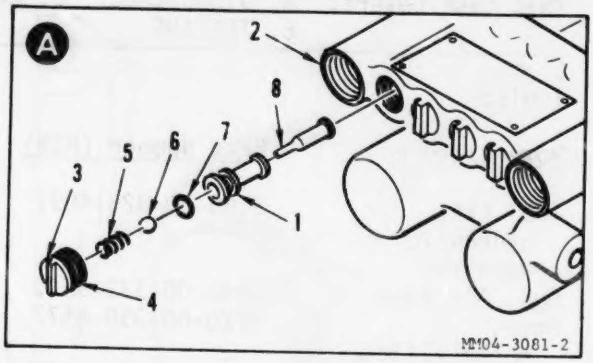


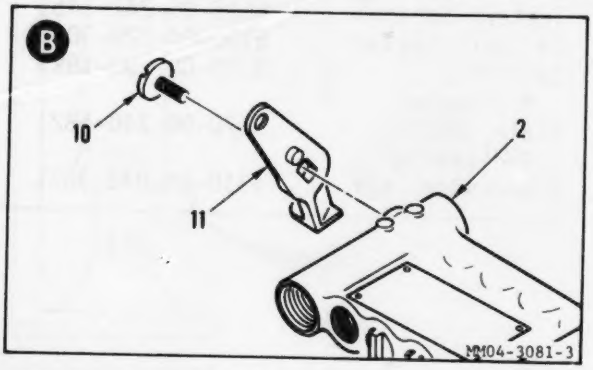
GO TO NEXT PAGE

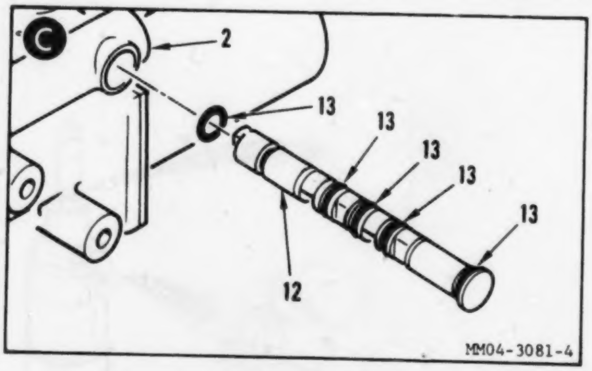
3-4-15. PARKING BRAKE VALVE REPAIR (AVIM) (cont)

A. DISASSEMBLY

1. **Remove four valve seats (1) from valve (2).**
   a. Place rags under valve (2) to catch hydraulic fluid spills.
   b. Cut lockwire. Remove cap (3).
   c. Remove and discard packing (4) from cap (3).
   d. Remove spring (5) and ball bearing (6).
   e. Remove seat (1).
   f. Remove and discard packing (7) from seat (1).
   g. Remove lifter (8) from seat (1).
   h. Repeat steps a. through g. for all four seats (1).
2. **Remove cam (12) from valve (2).**
   a. Cut lockwire. Remove screw (10) from lever (11).
   b. Remove lever (11).
   c. Push cam (12) out of valve (2).
   d. Remove and discard five packings (13) from cam (12).







GO TO NEXT PAGE

3-4-15. PARKING BRAKE VALVE REPAIR (AVIM) (cont) 3-4-15

3. **Remove piston (14) from valve (2).**

   a. Remove cap (15).

   b. Remove and discard packings (16) and (17).

   c. Remove piston (14) and spring (18).

   d. Remove and discard packing (19).

CAUTION

Piston caps are under spring pressure. Do not damage piston and piston bore when removing retaining plate screws.

4. **Remove two pistons (20) from valve (2).**

   a. Cut lockwire. Remove four screws (21) while pushing cap (22) into valve (2).

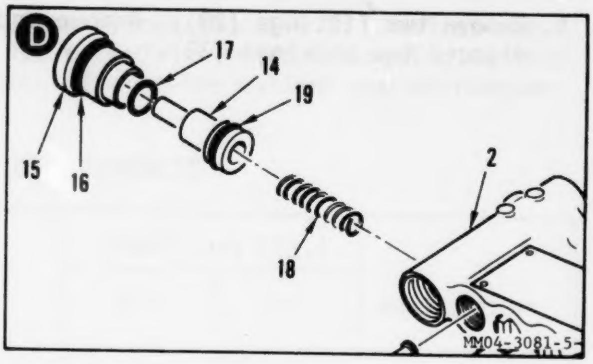
   b. Carefully release pressure of spring (23). Remove cap (22), retaining plate (24), and end plate (25).

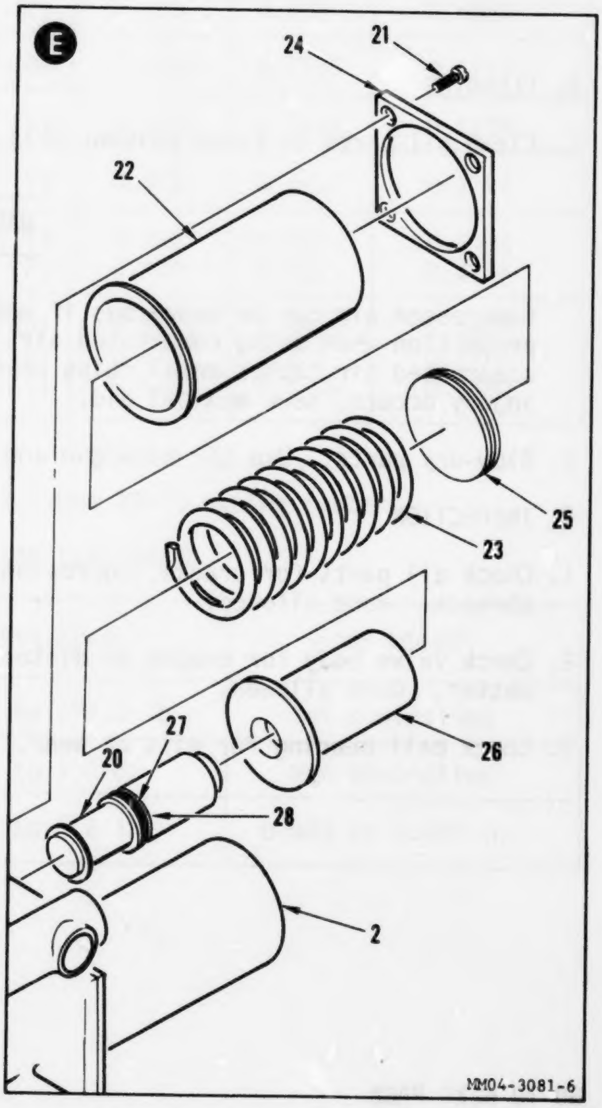
   c. Remove spring (23) and guide (26).

   d. Remove piston (20).

   e. Remove and discard packing (27) and retainer (28).

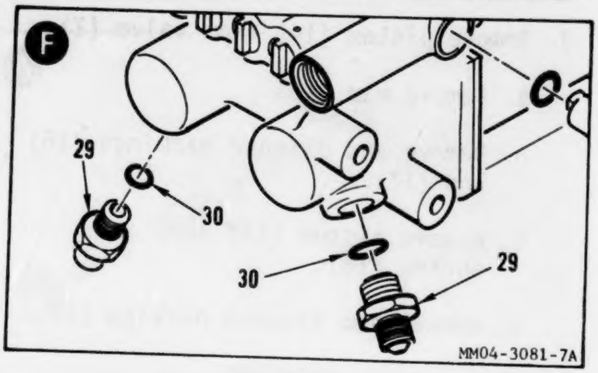
   f. Repeat steps a. thru e. to remove other piston (20).





GO TO NEXT PAGE

5. Remove two fittings (29). Remove and discard two packings (30).



B. CLEANING

1. Clean all parts in fresh solvent (E1) (para 1-5-36).

WARNING

Compressed air can be dangerous if not properly used. Always wear eye protection when using compressed air. You can be blinded if a stream of compressed air causes metal chips or other debris to hit your eyes. If an injury occurs, seek medical aid.

2. Blow-dry parts. Use air blow gun and hose.

C. INSPECTION

1. Check all parts for cracks, corrosion, scoring, and stripped or damaged threads. None allowed.
2. Check valve body for cracks or distortion, ports and passage for any foreign matter. None allowed.
3. Check ball bearing for pits or wear. None allowed.

GO TO NEXT PAGE

4. **Check all parts for conformance to dimensions listed in table I.** Minimum and maximum are ideal limits. Measurements not exceeding the replacement dimension permit the part to be continued in service. Use inside caliper and micrometer caliper.

TABLE I. TABLE OF TOLERANCES

Part Name and Index No.	Measure	Dimensions (in.)		Replacement
		Min	Max	
Piston (20)	OD mating with valve (2)	0.685	0.686	0.6845
Seat (1)	ID mating with lifter (8)	0.1250	0.1255	0.1257
Lifter (8)	OD mating with seat (1)	0.1240	0.1245	0.1238
Cam (12)	OD mating with valve (2)	0.371	0.372	0.3708
Piston (14)	OD mating with cap (15) OD mating with valve (2)	0.200 0.434	0.201 0.435	0.1995 0.4335
Valve (2)	Bore mating with piston (20) Bore mating with cam (12) Bore mating with piston (14)	0.6865 0.374 0.4365	0.6885 0.376 0.4385	0.6890 0.3765 0.4390

5. **Check springs for conformance to table I. Use 10-lb spring tester.**

TABLE II. SPRING TEST CHART

Index No.	Test Length	Test Load	Free Length
(23)	2.696 in.	162.0 to 182.0 lb	Not controlled
(5)	0.218 in.	3.2 to 4.0 oz	Not controlled
(18)	0.770 in.	3.6 to 5.6 lb	0.955 to 0.985 in.

GO TO NEXT PAGE

D. REASSEMBLY

1. **Install two pistons (20) in valve (2).**

   a. Lubricate new packing (27) and new retainer (28). Use clean hydraulic fluid (E13).

   b. Install packing (27) and retainer (28) on piston (20).

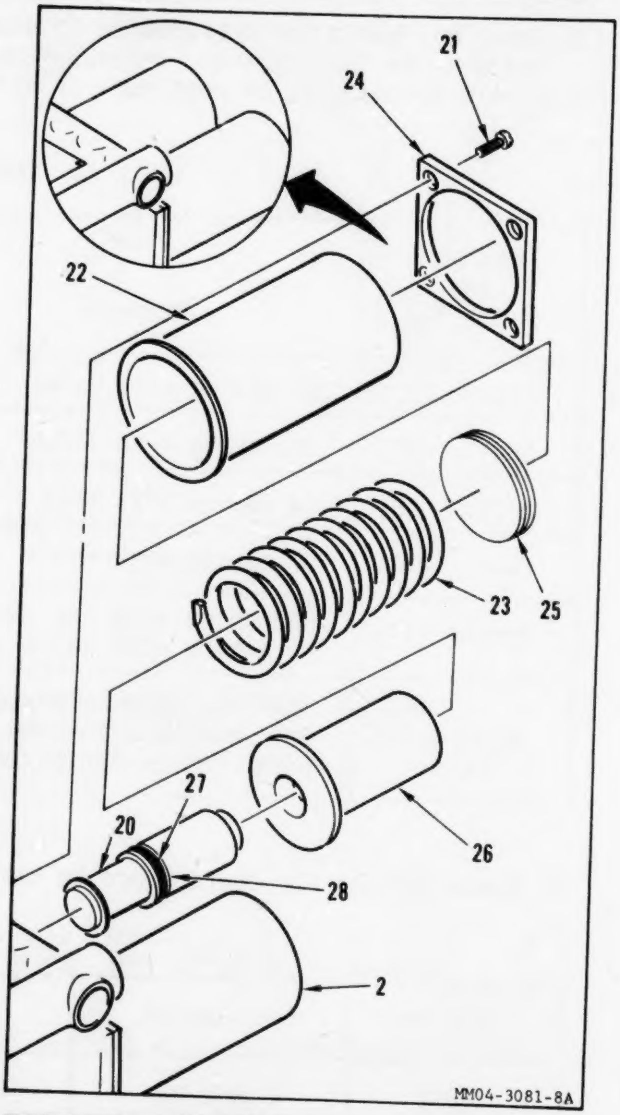
   c. Install piston (20) in valve (2).

   d. Place spring (23) over guide (26). Put end plate (25) on spring (23). Slide cap (22) over end plate (25), spring (23), and guide (26).

   e. Place cap (22) on valve (2). Attach retaining plate (24) with four screws (21).

   f. Lockwire screws (21). Use lockwire (E34).

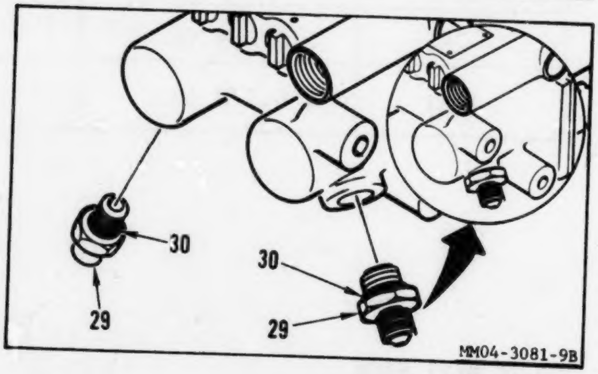
   g. Repeat steps a. thru f. for other piston (20).



2. **Install two fittings (29).**

   a. Lubricate two new packings (30) with clean hydraulic fluid (E13. Install packings (30) on fittings (29).

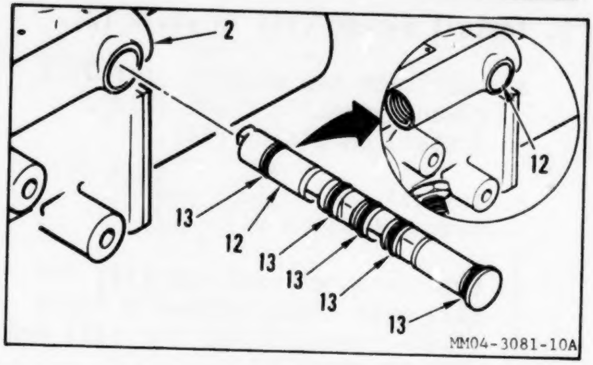
   b. Install two fittings (29).

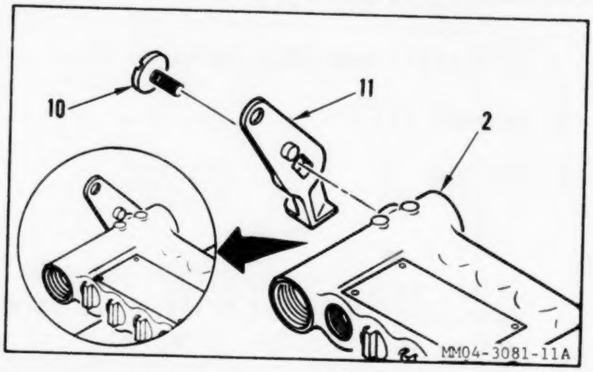


GO TO NEXT PAGE

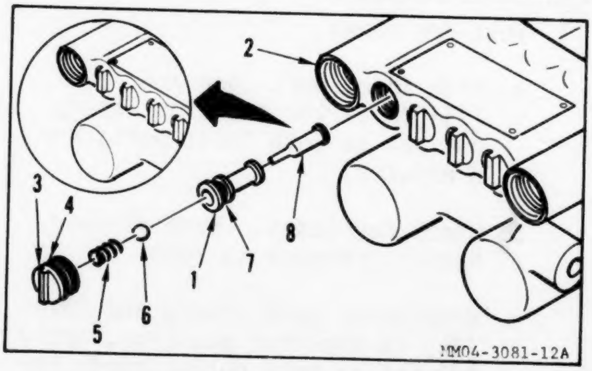
3-4-15. PARKING BRAKE VALVE REPAIR (AVIM) (cont)

3. **Install cam (12) in valve (2).**
   - a. Lubricate five new packings (13) with clean hydraulic fluid (E13). Install packings (13) on cam (12).
   - b. Install cam (12) in valve (2).
   - c. Position lever (11).
   - d. Install lever (11) with screw (10).
   - e. Lockwire screw (10). Use lockwire (E34).

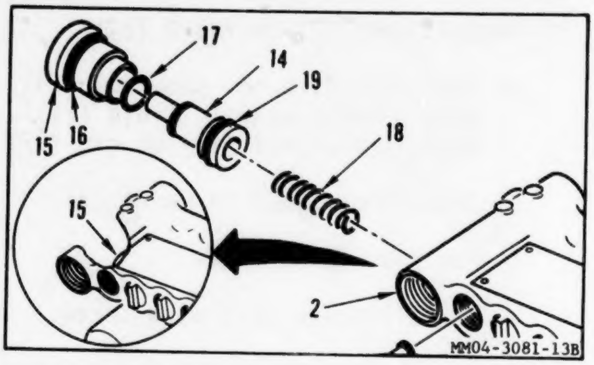




5. **Install four seats (1) in valve (2).**
   - a. Lubricate new packing (7) with clean hydraulic fluid (E13). Install packing (7) on seat (1).
   - b. Install lifter (8) in seat (1).
   - c. Install seat (1) in valve (2).
   - d. Install ball bearing (6) and spring (5) in valve (2).
   - e. Lubricate new packing (4) with clean hydraulic fluid (E13). Install packing (4) on cap (3).
   - f. Install cap (3).
   - g. Lockwire cap. Use lockwire (E34).
   - h. Repeat steps a. thru g. for all four seats (1).



GO TO NEXT PAGE



6. Install piston (14) in valve (2).

   a. Lubricate new packing (19) with clean hydraulic fluid (E13). Install on piston (14).

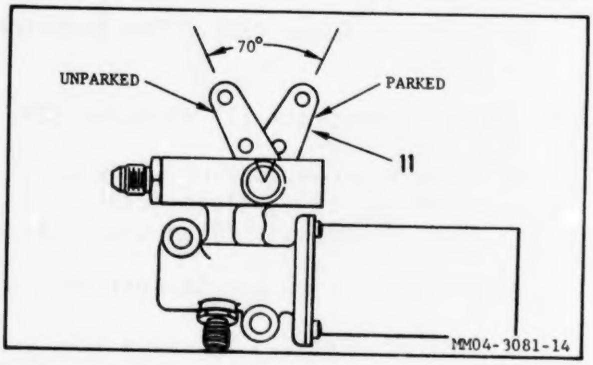
   b. Install spring (18) and piston (19) in valve (2).

   c. Lubricate new packings (16) and (17) with clean hydraulic fluid (E13). Install packings (16) and (17) on cap (15).

   d. Install cap (15) in valve (2).

7. Inspect (TI).

E. TESTING



NOTE

Slight wetting at seals or signs of hydraulic fluid insufficient to form a drop in 5 minutes is normal.

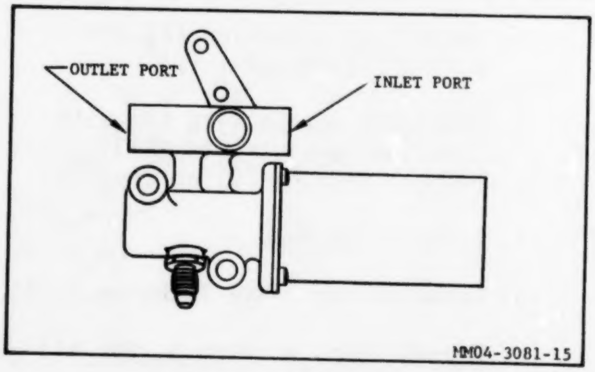
1. Test for leaks.

   a. With inlet port open and lever (11) in parked position, apply 840 psi to both inlet ports for 5 minutes.

   b. Check for leaks. None allowed. Reduce pressure to zero.

   c. With inlet port closed and lever (11) in unparked position, apply 840 psi to both outlet ports for 5 minutes.

   d. Check for leaks. None allowed. Reduce pressure to zero.



GO TO NEXT PAGE

3-4-15. PARKING BRAKE VALVE REPAIR (AVIM) (cont)

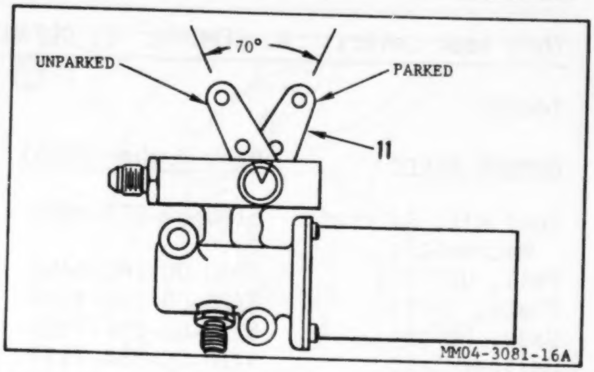
2. **Perform handle load test.**

   a. With lever (11) in parked position, apply 840 psi to both outlet ports.

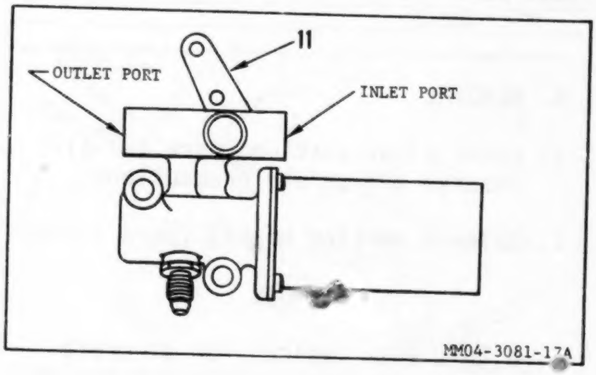
   b. Apply **15 INCH-POUNDS** to lever (11). Use dial indicating scale.

   c. Apply 130 psi to inlet port nearest to lever (11). Leave other inlet port unpressurized.

   d. Apply 130 psi to unpressurized inlet port. Lever (11) must move to unparked position when pressure is applied.



MM04-3081-16A



MM04-3081-17A

CAUTION

Unit preserved with MIL-L-6083 hydraulic fluid. Flush with MIL-H-5606 before use.

NOTE

If parking brake valve is not to be returned to immediate service, flush valve with hydraulic fluid. Use hydraulic fluid (E135). Plug ports and tag.

END OF TASK

3-4-16. WHEEL BRAKE, ONE-PIECE FRICTION LINING, BRAKE DISK, AND PISTON REMOVAL 3-4-16

This task covers: A. REMOVAL B. CLEANING C. INSPECTION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Pail, Utility	7240-00-160-0455
Plate, Surface	5220-00-293-3556
Gage, Height	5210-00-067-7118
Caliper Set, Micrometer	5210-00-554-7134

Personnel Required:

67R10 Attack Helicopter Repairer

Equipment Conditions:

1-7-2	Helicopter safed
3-2-6	Wheel and tire removed

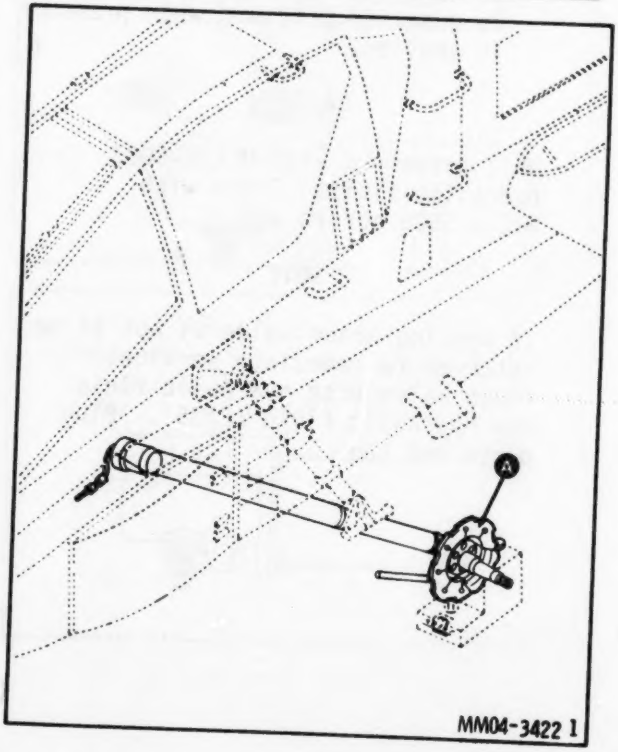
A. REMOVAL

1. Enter pilot station (para 1-7-1). Observe all safety precautions.

2. Release parking brakes (para 1-7-6).

NOTE

- This task typical for aircraft equipped with one-piece friction linings.
- This task typical for left or right main wheel brakes.



MM04-3422 1

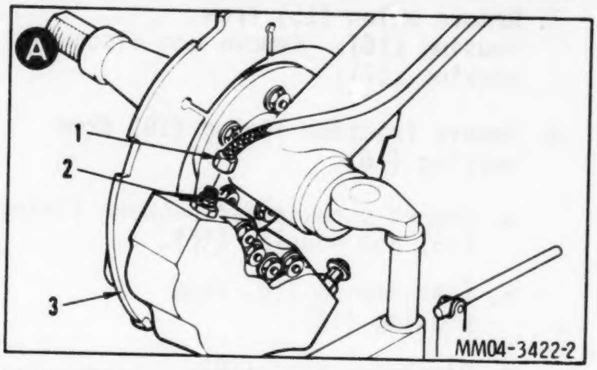
GO TO NEXT PAGE

3-4-16. WHEEL BRAKE, ONE-PIECE FRICTION LINING, BRAKE DISK, AND PISTON REMOVAL (cont) 3-4-16

3. **Disconnect hose nut (1) from union (2) on housing (3).**

   a. Hold union (2). Remove nut (1).

   b. Use utility pail to catch hydraulic fluid spills. Discard spilled fluid.



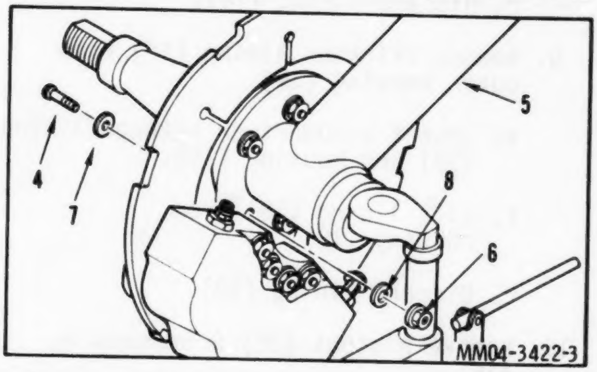
NOTE

If disk is to be replaced, do steps 4 thru 7. If friction lining is to be replaced, do steps 4 thru 9. If pistons are to be replaced, do steps 4 thru 8, and step 10.

4. **Remove bolts (4) from trailing arm (5).**

   a. Hold eight nuts (6). Remove eight bolts (4) and washers (7).

   b. Remove eight nuts (6) and washers (8).

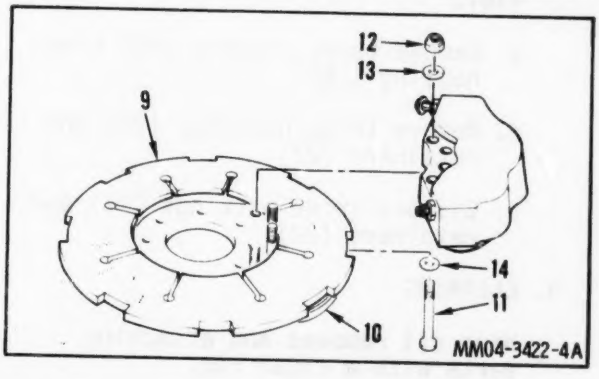


5. **Remove disk (9) from housing (10).**

   a. Hold four bolts (11). Remove four nuts (12) and washers (13).

   b. Remove four bolts (11) and washers (14).

   c. Separate disk (9) from housing (10).



GO TO NEXT PAGE

3-4-16. WHEEL BRAKE, ONE-PIECE FRICTION LINING, BRAKE DISK, AND PISTON REMOVAL (cont) 3-4-16

7. **Remove union (15) from housing (16).** Remove and discard packing (17).

8. **Remove friction lining (18) from housing (16).**

   a. Insert screwdriver between lining (18) and housing (16).

   b. Lift lining (18) from housing (16).

   c. Discard lining (18).

9. **Remove friction lining (18) from outer housing (19).**

   a. Insert screwdriver between lining (18) and housing (19).

   b. Lift lining (18) from housing (19).

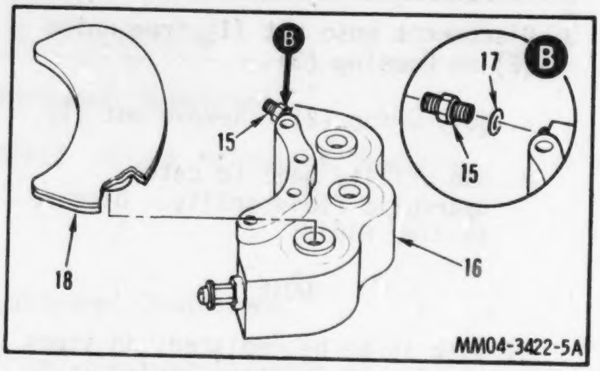
   c. Discard lining (18).

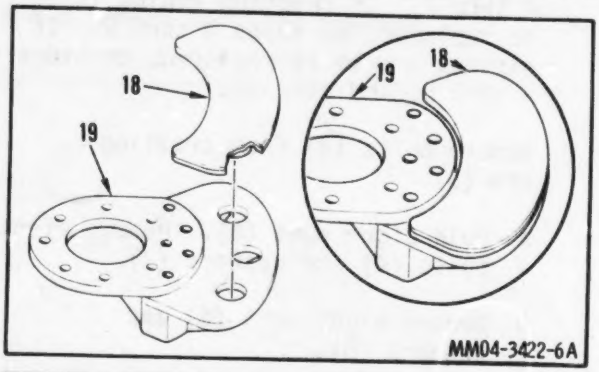
10. **Remove pistons (20) from housing (16).**

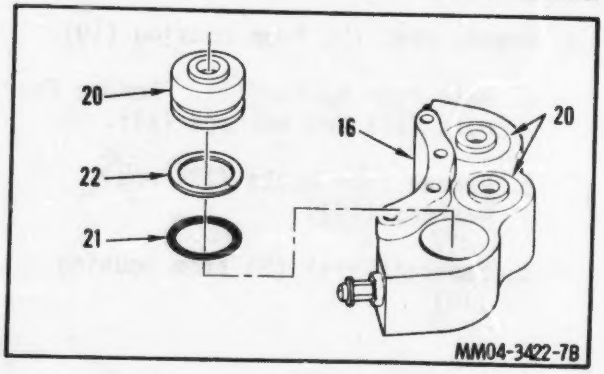
    a. Remove three pistons (20) from housing (16).

    b. Remove three packings (21) and retainers (22).

    c. Discard three packings (21) and retainers (22).







B. CLEANING

Wipe all removed and attaching parts with a clean rag.

GO TO NEXT PAGE

3-4-16. WHEEL BRAKE, ONE-PIECE FRICTION LINING, BRAKE DISK, AND PISTON REMOVAL (cont) 3-4-16

C. INSPECTION

NOTE

Disk discoloration caused by heat is acceptable.

1. **Check inner housing, outer housing, friction linings, and pistons for cracks.** None allowed.
2. **Check inner housing, outer housing, and pistons for corrosion** (para 1-5-38).
3. **Check disk for dishing.** Use surface plate and height gage. Any disk dished in excess of **0.060-INCH** is not acceptable.
4. **Check disk for wear.** Use micrometer caliper. Any disk worn to a thickness less than **0.175-INCH** is not acceptable.
5. **Check friction linings for wear.** Use micrometer caliper. Any lining worn to a thickness less than **0.034 INCH** is not acceptable.

END OF TASK

3-4-17. WHEEL BRAKE, ONE-PIECE FRICTION LINING, BRAKE DISK, AND PISTON INSTALLATION 3-4-17

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 3/8 Drive	5120-00-288-8865

Materials/Parts:

Packing (4)
Friction Lining (2)
Packing Retainer (3)
(E13) Hydraulic Fluid
(E77) Antiseize Lubricant

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T

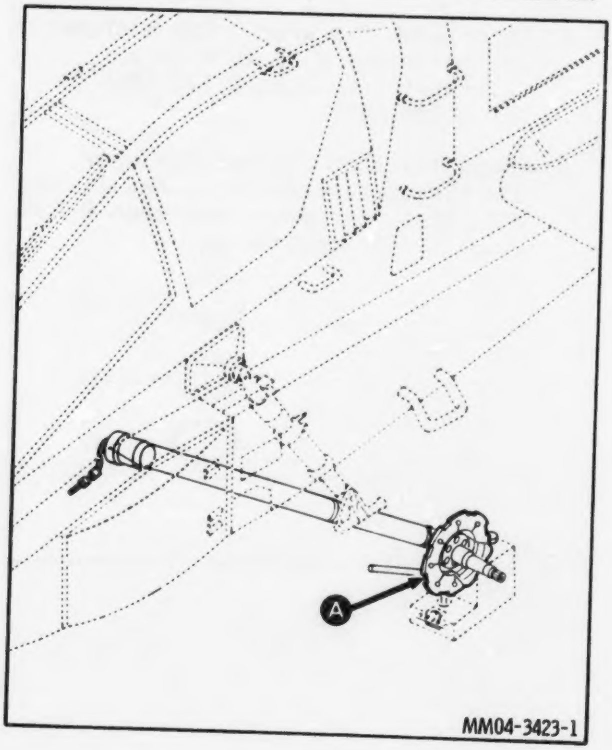
Equipment Conditions:

1-7-2 Helicopter safed

NOTE

- This task is typical for aircraft equipped with one-piece friction linings.
- This task is typical for left or right main wheel brakes.

1. **If replacement wheel brake is being installed, do steps 2 thru 4, then steps 7 thru 21. If new friction linings are being installed, do steps 6 thru 21. If new brake pistons only are being installed, do steps 5 and 13 thru 21.**



MM04-3423-1

GO TO NEXT PAGE

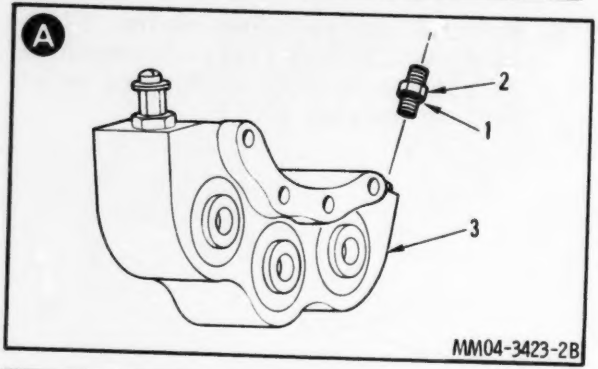
3-4-17. WHEEL BRAKE, ONE-PIECE FRICTION LINING, BRAKE DISK, AND PISTON INSTALLATION (cont) 3-4-17

2. **Lubricate new packing (1) and union (2).** Use hydraulic fluid (E13).

3. **Install packing (1) on union (2).**

NOTE

Union and bleed fittings are interchangeable to provide for left and right brake installation.



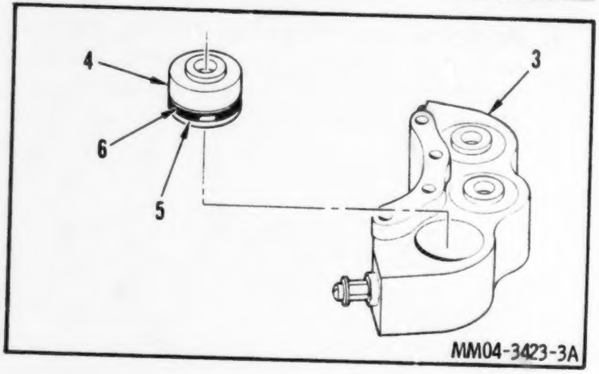
4. **Install union (2) on inner housing (3).** Torque union (2) to **135 INCH-POUNDS.**

5. **Install pistons (4) in inner housing (3).**

   a. Lubricate three new packings (5) and new retainers (6). Use hydraulic fluid (E13).

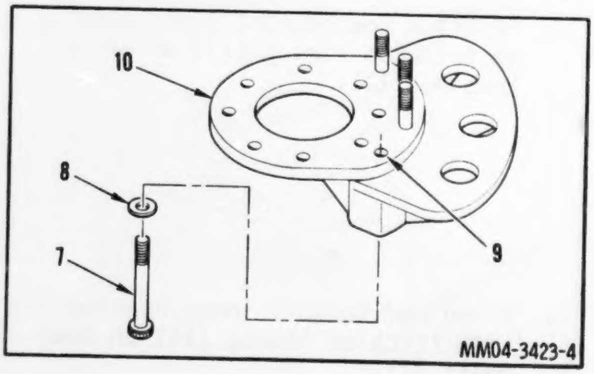
   b. Install retainers (6) and packings (5) on three pistons (4).

   c. Install three pistons (4) in inner housing (3). Fully seat pistons before installing friction linings.



6. **Lubricate four bolts (7) and four countersink washers (8).** Use antiseize lubricant (E77).

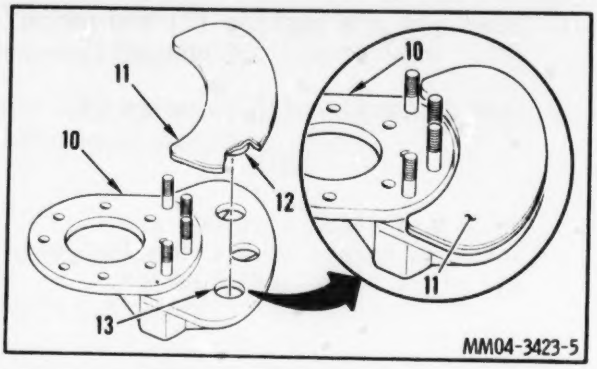
7. **Insert four countersink washers (8) and bolts (7) through four holes (9) in outer housing (10).** Position housing (10) on flat surface with heads of bolts (7) down.



GO TO NEXT PAGE

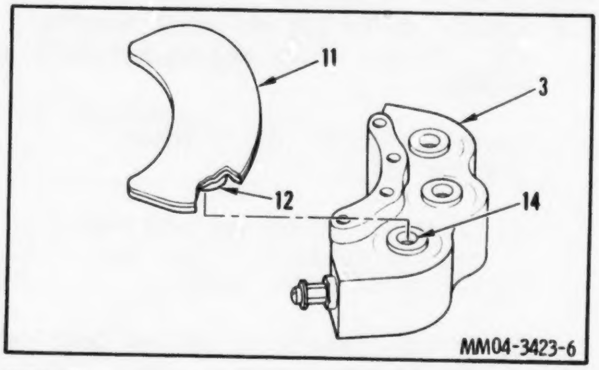
3-4-17. WHEEL BRAKE, ONE-PIECE FRICTION LINING, BRAKE DISK, AND PISTON INSTALLATION (cont) 3-4-17

8. **Position new friction lining (11) on outer housing (10).** Aline three locating pins (12) with three holes (13) in housing (10).



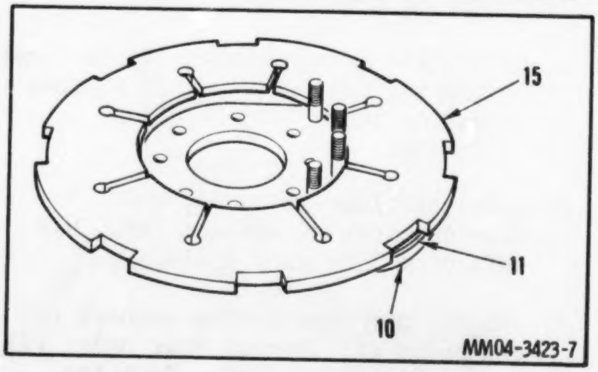
MM04-3423-5

9. **Position new friction lining (11) on inner housing (3).** Aline three locating pins (12) with holes in three pistons (14).



MM04-3423-6

10. **Position and support disk (15) on friction lining (11) of outer housing (10).**

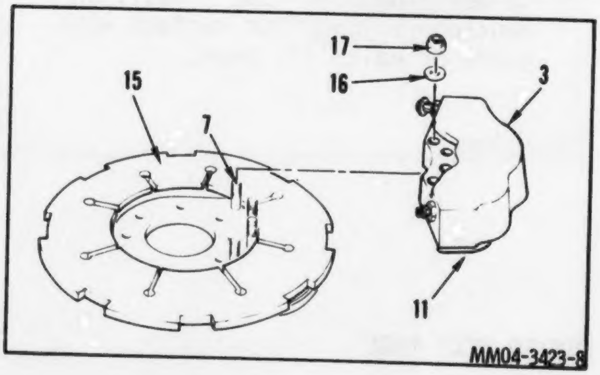


MM04-3423-7

11. **Aline and install inner housing (3) with friction lining (11) on four bolts (7).**

12. **Lubricate four washers (16) and nuts (17).** Use antiseize lubricant (E77).

13. **Install four washers (16) and nuts (17).** Hold four bolts (7). Torque four nuts (17) to **300 INCH-POUNDS.**



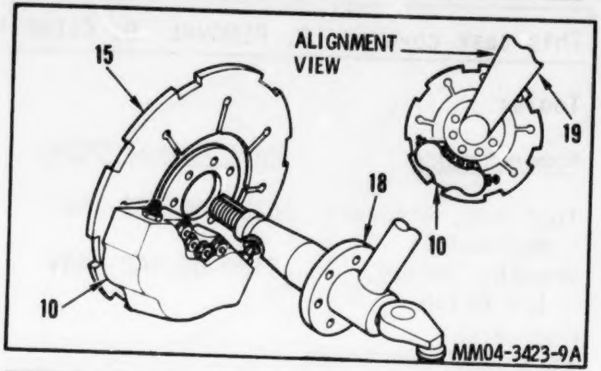
MM04-3423-8

GO TO NEXT PAGE

3-4-17. WHEEL BRAKE, ONE-PIECE FRICTION LINING, BRAKE DISK, AND PISTON INSTALLATION (cont) 3-4-17

14. **Position disk (15) on trailing arm flange (18) so center of outer housing (10) alines with center of trailing arm (19).**

15. **Aline bolt holes in disk (15) with bolt holes in trailing arm flange (18).**

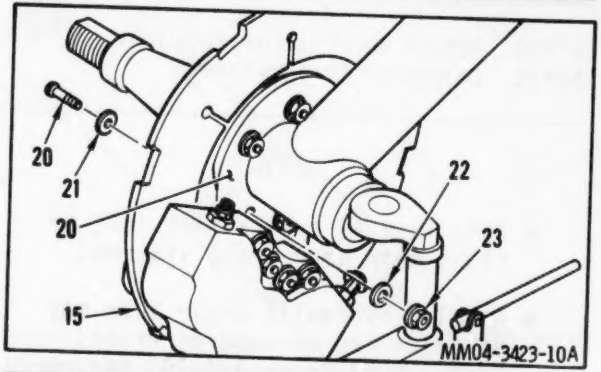


16. **Install eight bolts (20).** Torque eight bolts (20) to **360 INCH-POUNDS.**

    a. Install eight bolts (20) through countersink washers (21) and disk (15).

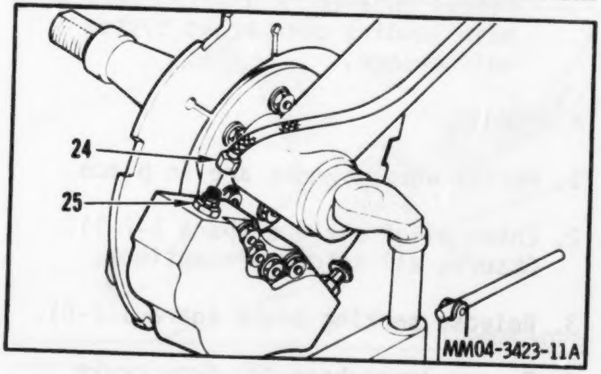
    b. Install eight washers (22) and nuts (23).

    b. Hold eight nuts (23). Torque eight bolts (20) to **360 INCH-POUNDS.**



NOTE

If solid brake system tube is installed, replace with flexible tube (para 3-4-19).



17. **Install nut (24) on union (25).** Torque nut (24) to **120 INCH-POUNDS.**

18. **Inspect (TI).**

19. **Install main landing gear wheel and tire** (para 3-2-7).

20. **Bleed brake system** (para 1-5-34).

21. **Perform main landing gear operational check** (TM 55-1520-238-T).

END OF TASK

3-4-18. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION 3-4-18

This task covers: A. REMOVAL B. CLEANING C. INSPECTION D. INSTALLATION

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692
Wrench, Torque, 1/4 Drive	5120-00-542-4489

Personnel Required:

67R10	Attack Helicopter Repairer
66R30	Inspector/Supervisor

References:

TM 55-1520-238-T

Equipment Conditions:

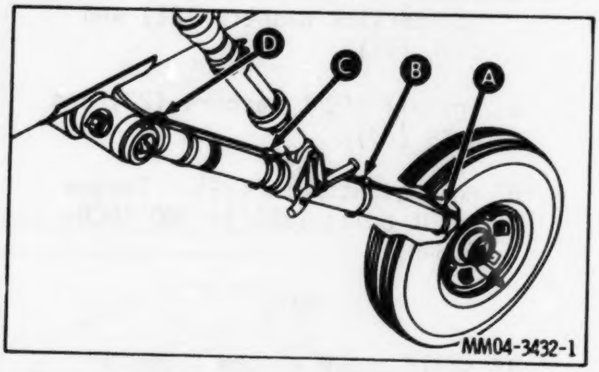
1-7-2	Helicopter safed
2-2-2	Fairings L140 and R140 removed

NOTE

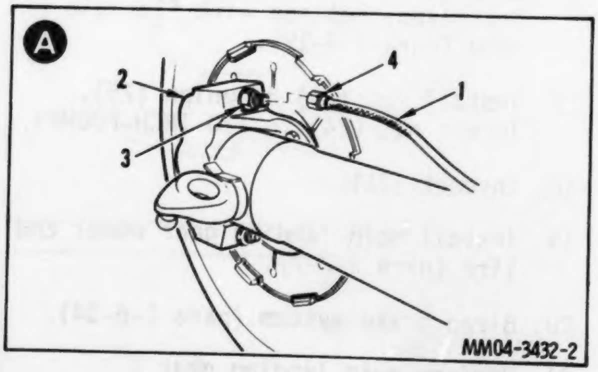
- This task is typical for left or right main gear brake systems.
- A solid hydraulic brake tube may be installed on some aircraft. Remove tube (para 3-4-19) before main landing gear brake system maintenance.

A. REMOVAL

1. **Verify wheel chocks are in place.**
2. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**
3. **Release parking brake** (para 1-7-6).
4. **Remove lower hose (1) from brake (2).** Hold union (3). Loosen nut (4).



MM04-3432-1



MM04-3432-2

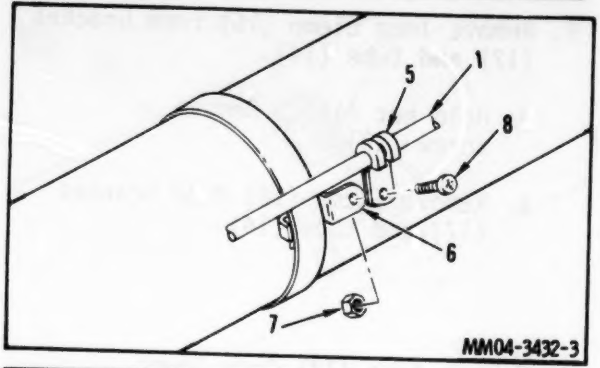
GO TO NEXT PAGE

3-4-18. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION (cont) 3-4-18

5. **Remove loop clamp (5) from bracket (6) and hose (1).**

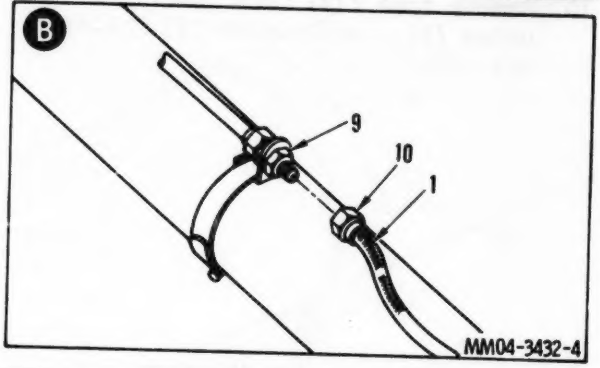
   a. Hold nut (7). Remove screw (8).

   b. Remove clamp (5) from bracket (6), and hose (1).



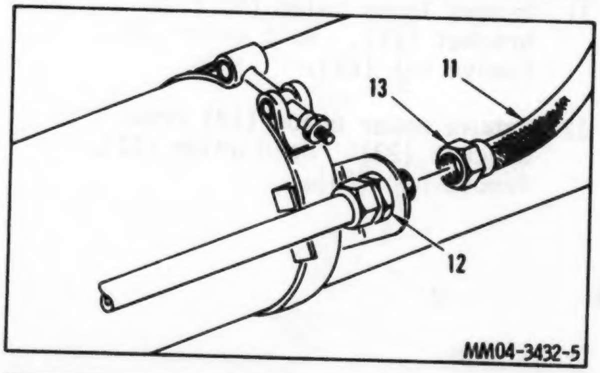
MM04-3432-3

6. **Remove hose (1) from lower union (9).** Hold union (9). Remove nut (10).



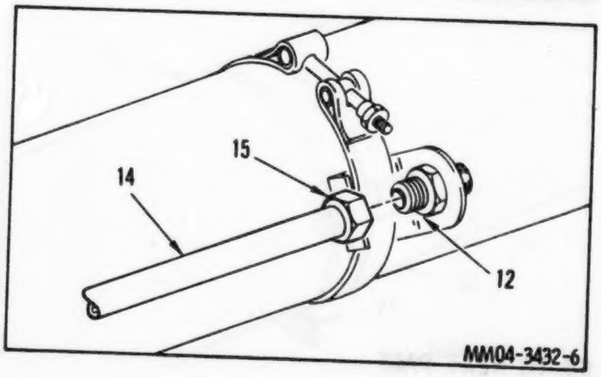
MM04-3432-4

7. **Remove upper hose (11) from upper union (12).** Hold union (12). Remove nut (13).



MM04-3432-5

8. **Remove tube (14) from union (12).** Hold union (12). Remove nut (15).



MM04-3432-6

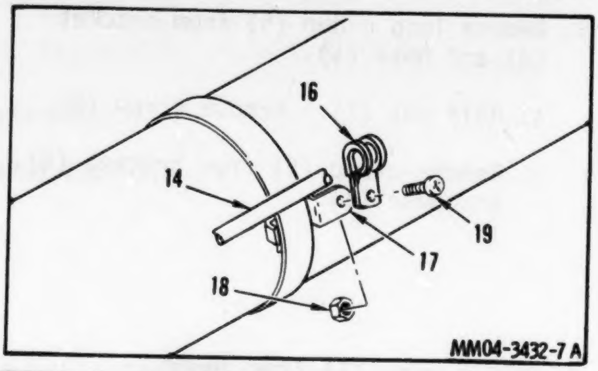
GO TO NEXT PAGE

3-4-18. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION (cont) 3-4-18

9. **Remove loop clamp (16) from bracket (17) and tube (14).**

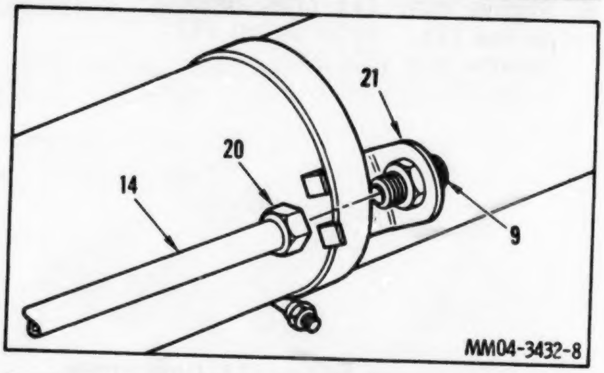
   a. Hold nut (18). Remove screw (19).

   b. Remove clamp (16) from bracket (17) and tube (14).



MM04-3432-7 A

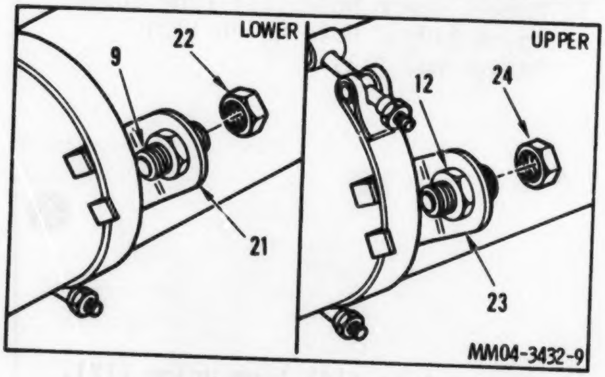
10. **Remove tube (14) from lower union (9).** Hold union (9). Loosen nut (20).



MM04-3432-8

11. **Remove lower union (9) from bracket (21).** Hold union (9). Remove nut (22).

12. **Remove upper union (12) from bracket (23).** Hold union (12). Remove nut (24).



MM04-3432-9

GO TO NEXT PAGE

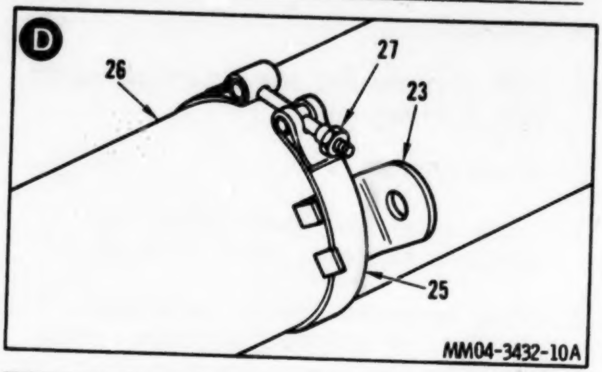
3-4-18. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION (cont) 3-4-18

13. **Remove hose clamp (25) and bracket (23) from trailing arm (26).**

    a. Remove nut (27) from clamp (25).

    b. Remove bracket (23) from under clamp (25).

    c. Remove clamp (25) from trailing arm (26).



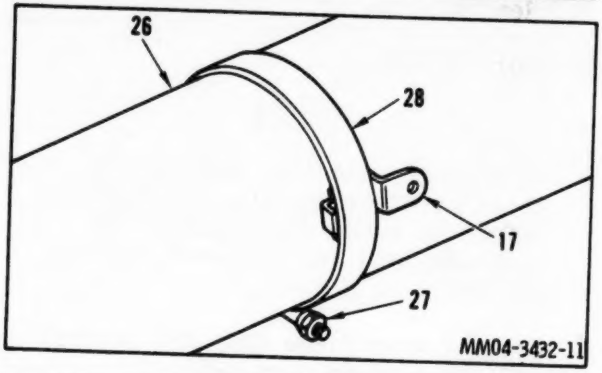
MM04-3432-10A

14. **Remove hose clamp (28) and bracket (17) from trailing arm (26).**

    a. Remove nut (27) from clamp (28).

    b. Remove bracket (17) from under clamp (28).

    c. Remove clamp (28) from arm (26).



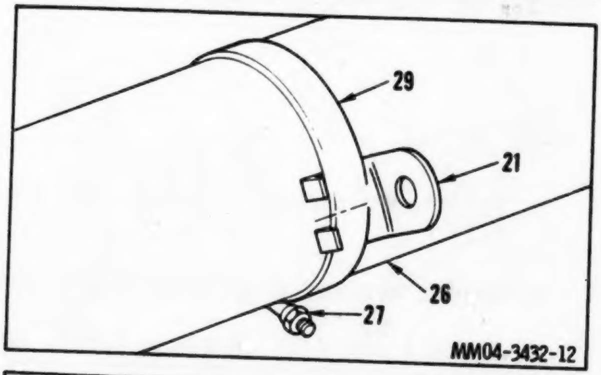
MM04-3432-11

15. **Remove hose clamp (29) and bracket (21) from trailing arm (26).**

    a. Remove nut (27) from clamp (29).

    b. Remove bracket (21) from under clamp (29).

    c. Remove clamp (29) from arm (26).



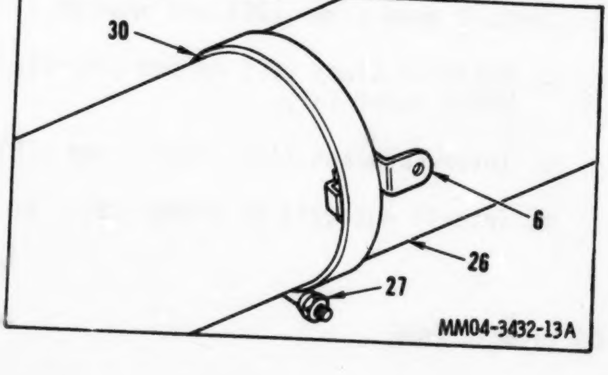
MM04-3432-12

16. **Remove hose clamp (30) and bracket (6) from trailing arm (26).**

    a. Remove nut (27) from clamp (30).

    b. Remove bracket (6) from under clamp (30).

    c. Remove clamp (30) from arm (26).



MM04-3432-13A

GO TO NEXT PAGE

3-4-18. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION (cont) 3-4-18

B. CLEANING

Wipe all removed and attaching parts with a clean rag.

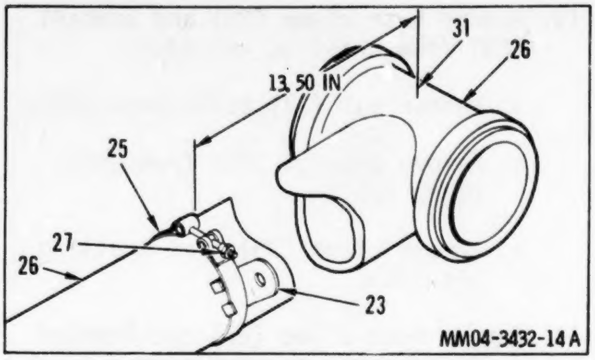
C. INSPECTION

1. **Check upper and lower unions for stripped threads.** None allowed.
2. **Check hoses for nicks, scratches, chafing, or stripped threads.** None allowed.

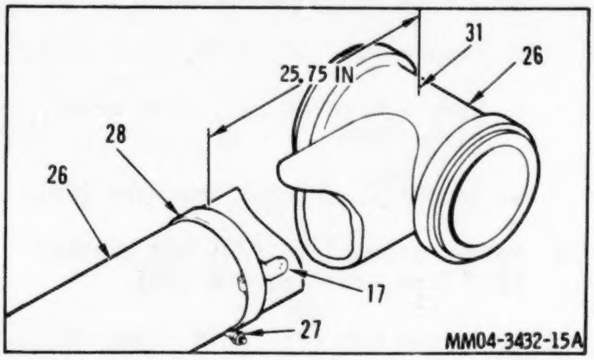
D. INSTALLATION

CAUTION

To prevent damage to tube during kneeling/erecting, ensure clamps, brackets, tube, and hoses do not protrude into area between fuselage and trailing arm.



MM04-3432-14 A



MM04-3432-15A

1. **Install hose clamp (25) and bracket (23) on trailing arm (26).**
   a. Position clamp (25) on arm (26) **13.50 INCHES** from center of arm pivot point (31).
   b. Insert bracket (23) under clamp (25).
   c. Install nut (27) on clamp (25). Do not tighten nut.
2. **Install hose clamp (28) and bracket (17) on trailing arm (26).**
   a. Position clamp (28) on arm (26) **25.75 INCHES** from center of trailing arm pivot point (31).
   b. Insert bracket (17) under clamp (28).
   c. Install nut (27) on clamp (28). Do not tighten nut (27).

GO TO NEXT PAGE

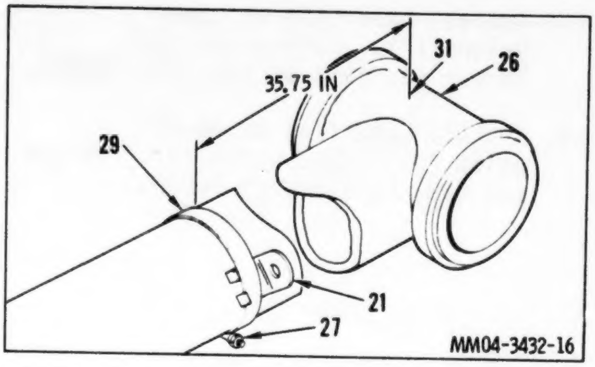
3-4-18. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION (cont) 3-4-18

3. **Install hose clamp (29) and bracket (21) on trailing arm (26).**

   a. Position clamp (29) on arm (26) **35.75 INCHES** from center of pivot point (31).

   b. Insert bracket (21) under clamp (29).

   c. Install nut (27) on clamp (29). Do not tighten nut (27).



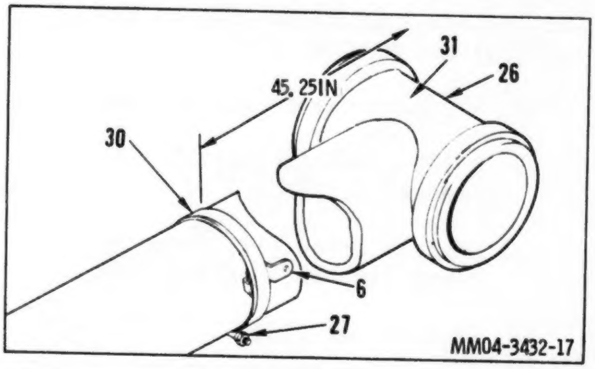
MM04-3432-16

4. **Install hose clamp (30) and bracket (21) on trailing arm (26).**

   a. Position clamp (30) on arm (26) **45.25 INCHES** from center of pivot point (31).

   b. Insert bracket (6) under clamp (30).

   c. Install nut (27) on clamp (30). Do not tighten nut (27).



MM04-3432-17

5. **Install upper union (12) on bracket (23).**

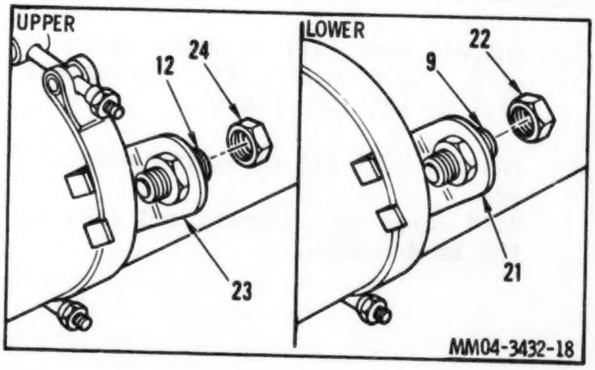
   a. Install union (12) through bracket (23).

   b. Install nut (24).

6. **Install lower union (9) on bracket (21).**

   a. Install union (9) through bracket (21).

   b. Install nut (22).



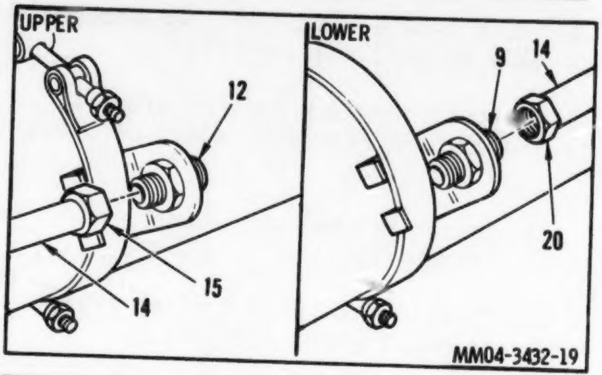
MM04-3432-18

GO TO NEXT PAGE

3-4-18. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION (cont) 3-4-18

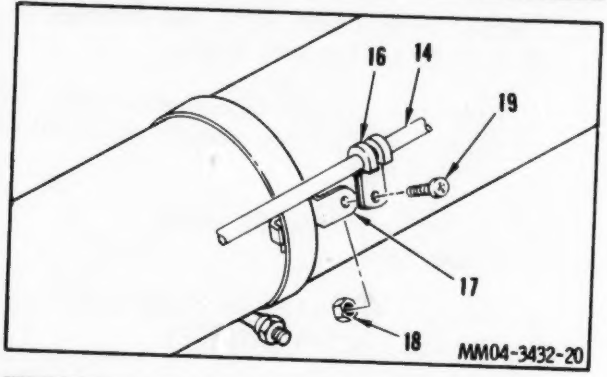
7. **Install tube (14) on upper union (12).** Hold union (12). Torque nut (15) to **135 INCH-POUNDS.**

8. **Install tube (14) on lower union (9).** Hold union (9). Torque nut (20) to **135 INCH-POUNDS.**



MM04-3432-19

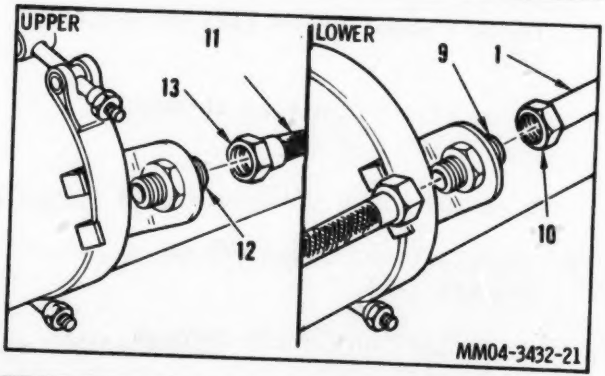
9. **Install loop clamp (16) on tube (14) and bracket (17).**
   a. Position clamp (16) on tube (14).
   b. Aline clamp (16) with bracket (17).
   c. Install screw (19) through clamp (16) and bracket (17).
   d. Install nut (18).



MM04-3432-20

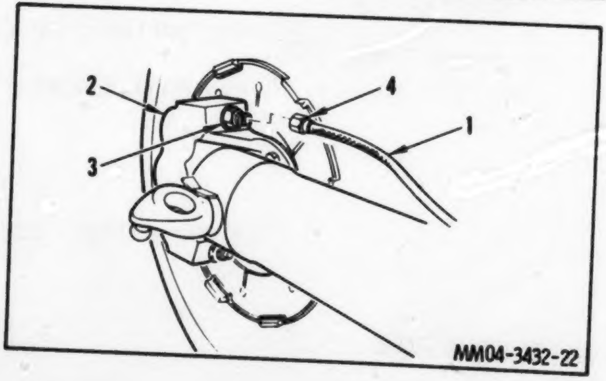
10. **Install hose (11) on upper union (12).** Hold union (12). Torque nut (13) to **135 INCH-POUNDS.**

11. **Install hose (1) on lower union (9).** Hold union (9). Torque nut (10) to **135 INCH-POUNDS.**



MM04-3432-21

12. **Install hose (1) on brake (2).** Hold union (3). Torque nut (4) to **135 INCH-POUNDS.**

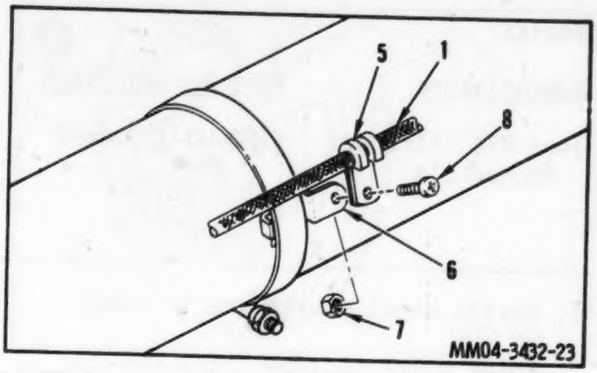


MM04-3432-22

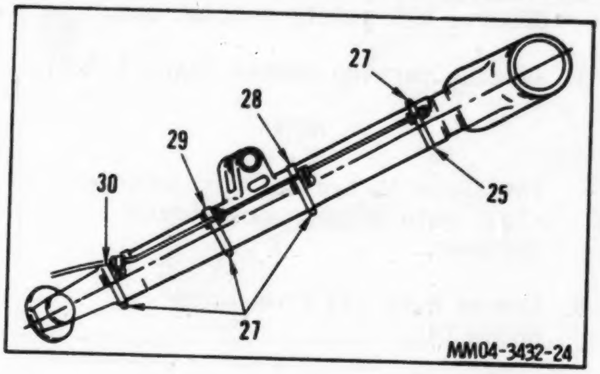
GO TO NEXT PAGE

3-4-18. MAIN LANDING GEAR WHEEL BRAKE, HOSE (NONMETALLIC), TUBE, AND CLAMP REMOVAL/INSTALLATION (cont) 3-4-18

13. Install loop clamp (5) on hose (1) and bracket (6).
    - a. Position clamp (5) on hose (1).
    - b. Aline clamp (5) with bracket (6).
    - c. Install screw (8) through clamp (5) and bracket (6).
    - d. Install nut (7).



14. Tighten nuts (27) on hose clamps (25), (28), (29), and (30).
15. Bleed brake system (para 1-5-34).
16. Inspect (TI).
17. Perform main landing gear operational check (TM 55-1520-238-T).
18. Secure access fairings L140 and R140 (para 2-2-2).



END OF TASK

3-4-19. MAIN LANDING GEAR WHEEL BRAKE TUBE AND HOSE CLAMP REMOVAL 3-4-19

Tools:

Nomenclature	Part Number (NSN)
Tool Kit, Aircraft Mechanic's	5180-00-323-4692

Personnel Required:

67R10 Attack Helicopter Repairer
66R30 Inspector/Supervisor

Equipment Conditions:

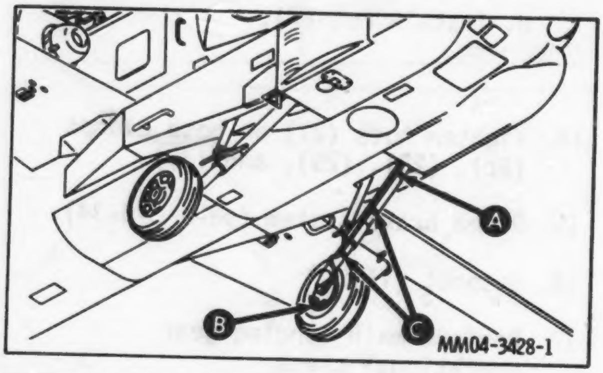
1-7-2 Helicopter safed

1. **Verify wheel chocks are in place.**
2. **Enter pilot station** (para 1-7-1). **Observe all safety precautions.**
3. **Release parking brakes** (para 1-7-6).

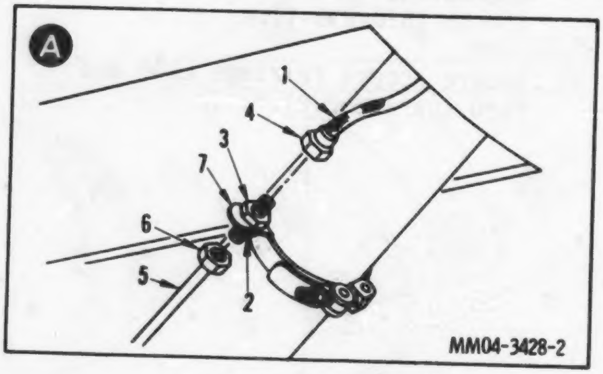
NOTE

This task is typical for left or right main landing gear brake systems.

4. **Remove hose (1) from upper union (2).**
   a. Hold nut (3).
   b. Remove nut (4).
5. **Remove tube (5) from upper union (2).**
   a. Hold union (2).
   b. Remove nut (6).
   c. Remove union (2) from bracket (7).



MM04-3428-1

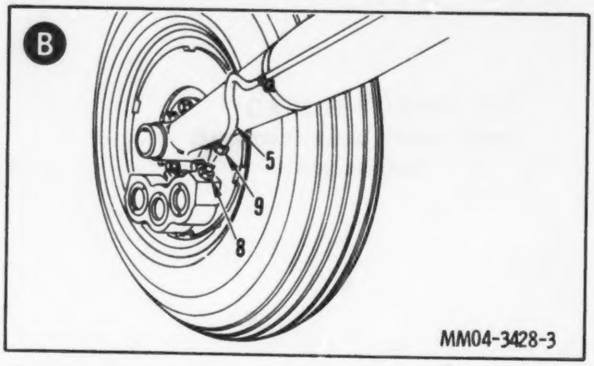


MM04-3428-2

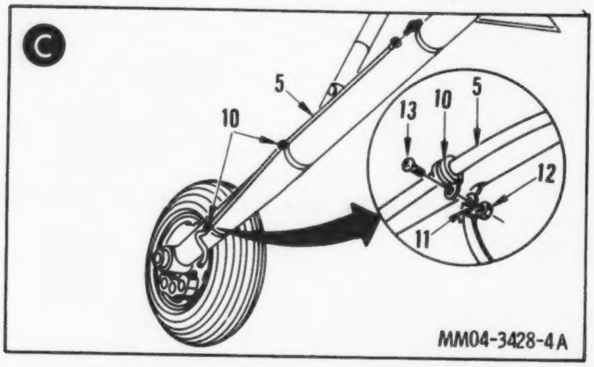
GO TO NEXT PAGE

3-4-19. MAIN LANDING GEAR WHEEL BRAKE TUBE AND HOSE CLAMP REMOVAL (cont) 3-4-19

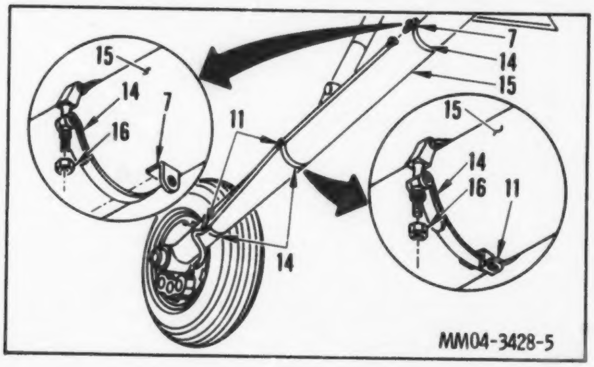
6. **Remove tube (5) from lower union (8).**
   a. Hold union (8).
   b. Remove nut (9).
7. **Remove two clamps (10) from brackets (11).**
   a. Hold nut (12). Remove screw (13).
   b. Remove clamps (10).
8. **Remove three clamps (14), two brackets (11) and bracket (7) from trailing arm (15).**
   a. Remove three nuts (16).
   b. Remove three clamps (14), two brackets (11), and bracket (7).
9. **Inspect (TI).**
10. **Refer to installation procedure for main landing gear wheel brake hose, tube, and clamp** (para 3-4-18).



MM04-3428-3



MM04-3428-4A



MM04-3428-5

END OF TASK

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-31, AVUM and AVIM for AH-64A Helicopter.

☆U.S. GOVERNMENT PRINTING OFFICE: 1989 242-451/05011

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
PFC JOHN DOE
COA, 3d ENGINEER BN
FT. LEONARDWOOD, MO 63108

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 55-1520-238-23-2	7 June 88	Aviation Unit and Intermediate Maintenance Manual AH-64A Helicopter

BE EXACT. PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
6	2-1 a			In line 6 of paragraph 2-1a the manual states the engine has 6 Cylinders. The engine on my set only has 4 Cylinders. Change the manual to show 4 Cylinders.
81		4-3		Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the Other.
125	line 20			I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got What I ordered, so the NSN is Wrong. Please give me a good NSN

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
JOHN DOE, PFC (268) 317-7111

SIGN HERE John Doe
JOHN DOE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

DRSTS-M Overprint 1, 1 Nov 80

P S --IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

TEAR ALONG PERFORATED LINE

REVERSE OF DA FORM 2028-2 Reverse of DRSTS-M Overprint 2,
1 Nov 80

TEAR ALONG PERFORATED LINE

FILL IN YOUR
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

____

____

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

COMMANDER
U S ARMY AVIATION SYSTEMS COMMAND
ATTN: AMSAV-MMD
4300 GOODFELLOW BOULEVARD
ST. LOUIS, MO 63120-1798

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER TM 55-1520-238-23-2	PUBLICATION DATE 7 June 88	PUBLICATION TITLE Aviation Unit and Intermediate Maintenance Manual AH-64A Helicopter

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2 Reverse of DRSTS-M Overprint 2,
1 Nov 80

TEAR ALONG PERFORATED LINE

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

____

____

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

COMMANDER
U S ARMY AVIATION SYSTEMS COMMAND
ATTN: AMSAV-MMD
4300 GOODFELLOW BOULEVARD
ST. LOUIS, MO 63120-1798

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL!

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER TM 55-1520-238-23-2	PUBLICATION DATE 7 June 88	PUBLICATION TITLE Aviation Unit and Aviation Intermedite Maintenance Manual AH-64A Helicopter

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2 Reverse of DRSTS-M Overprint 2, 1 Nov 80

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

____

____

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

COMMANDER
U S ARMY AVIATION SYSTEMS COMMAND
ATTN: AMSAV-MMD
4300 GOODFELLOW BOULEVARD
ST. LOUIS, MO 63120-1798

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER TM 55-1520-238-23-2

PUBLICATION DATE 7 June 88

PUBLICATION TITLE Aviation Unit and Intermediate Maintenance Manual AH-64A Helicopter

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2 Reverse of DRSTS-M Overprint 2, 1 Nov 80

TEAR ALONG PERFORATED LINE

FILL IN YOUR UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

____

____

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

COMMANDER
U S ARMY AVIATION SYSTEMS COMMAND
ATTN: AMSAV-MMD
4300 GOODFELLOW BOULEVARD
ST. LOUIS, MO 63120-1798

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 55-1520-238-23-2	7 June 88	Aviation Unit and Intermediate Maintenance Manual AH-64A Helicopter

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2 Reverse of DRSTS-M Overprint 2,
1 Nov 80

TEAR ALONG PERFORATED LINE

FILL IN YOUR
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

____

____

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

COMMANDER
U S ARMY AVIATION SYSTEMS COMMAND
ATTN: AMSAV-MMD
4300 GOODFELLOW BOULEVARD
ST. LOUIS, MO 63120-1798

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL!

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER TM 55-1520-238-23-2	PUBLICATION DATE 7 June 88	PUBLICATION TITLE Aviation Unit and Aviation Intermedite Maintenance Manual AH-64A Helicopter

BE EXACT PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2 Reverse of DRSTS-M Overprint 2,
1 Nov 80

TEAR ALONG PERFORATED LINE

FILL IN YOUR
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

____

____

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

COMMANDER
U S ARMY AVIATION SYSTEMS COMMAND
ATTN: AMSAV-MMD
4300 GOODFELLOW BOULEVARD
ST. LOUIS, MO 63120-1798

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN. . JOT DOWN THE DOPE ABOUT IT ON THIS FORM, CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.'

SOMETHING WRONG WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER TM 55-1520-238-23-2	PUBLICATION DATE 7 June 88	PUBLICATION TITLE Aviation Unit and Intermediate Maintenance Manual AH-64A Helicopter

BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

PRINTED NAME GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE

DA FORM 1 JUL 79 **2028-2**

PREVIOUS EDITIONS ARE OBSOLETE

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS

REVERSE OF DA FORM 2028-2 Reverse of DRSTS-M Overprint 2,
1 Nov 80

TEAR ALONG PERFORATED LINE

FILL IN YOUR
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

____

____

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

COMMANDER
U S ARMY AVIATION SYSTEMS COMMAND
ATTN: AMSAV-MMD
4300 GOODFELLOW BOULEVARD
ST. LOUIS, MO 63120-1798

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*
inches	centimeters	2.540
feet	meters	.305
yards	meters	.914
miles	kilometers	1.609
square inches	square centimeters	6.451
square feet	square meters	.093
square yards	square meters	.836
square miles	square kilometers	2.590
acres	square hectometers	.405
cubic feet	cubic meters	.028
cubic yards	cubic meters	.765
fluid ounces	milliliters	29,573
pints	liters	473
quarts	liters	.946
gallons	liters	3.785
ounces	grams	28.349
pounds	kilograms	.454
short tons	metric tons	.907
pound-feet	newton-meters	1.356
pound-inches	newton-meters	.11296

To change	*To*	*Multiply by*
ounce-inches	newton-meters	.007062
centimeters	inches	.394
meters	feet	3.280
meters	yards	1.094
kilometers	miles	.621
square centimeters	square inches	.155
square meters	square feet	10.764
square meters	square yards	1.196
square kilometers	square miles	.386
square hectometers	acres	2.471
cubic meters	cubic feet	35.315
cubic meters	cubic yards	1.308
milliliters	fluid ounces	.034
liters	pints	2.113
liters	quarts	1.057
liters	gallons	.264
grams	ounces	.035
kilograms	pounds	2.205
metric tons	short tons	1.102

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 057337-000